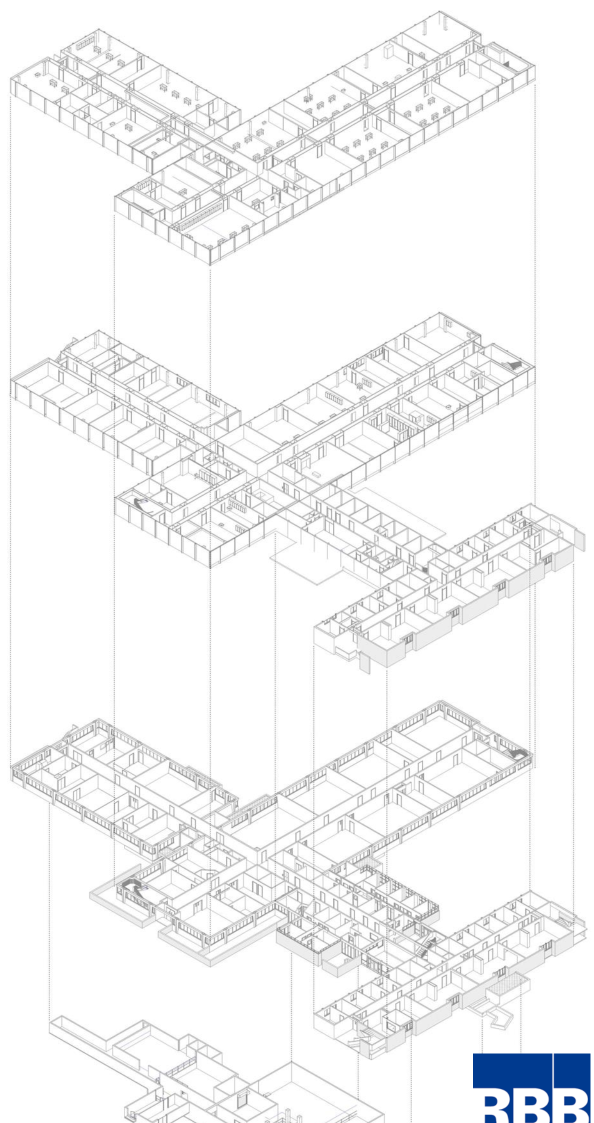
UNIVERSITY OF CALIFORNIA
RIVERSIDE

PIERCE HALL IMPROVEMENTS & INTERIOR IMPROVEMENTS

UCR PROJECT NOS. 950511 & 950532



RBB ARCHITECTS INC

11/01/2016

UNIVERSITY OF CALIFORNIA RIVERSIDE

PIERCE HALL IMPROVEMENTS & INTERIOR IMPROVEMENTS

UCR # 950511 & 950532
RBB #1611100

November 01, 2016

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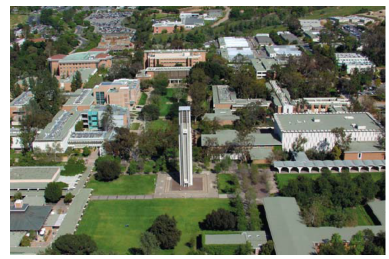
1.0

EXECUTIVE SUMMARY

1.1 SUMMARY

The University of California Riverside (UCR) has initiated the Pierce Hall Improvements and Pierce Hall Interior Improvements projects. The purpose of these projects is to undertake a capital renewal project that will provide upgrades to key building infrastructure systems, and optimize building performance and operating efficiencies. The upgrades will provide improved instructional and research laboratory and classroom space. The complementary lecture hall addition portion of the project provides new general assignment classrooms with a combined total of 200 student stations.

The existing Pierce Hall Building is centrally located at the northeast corner of the intersection of the Carillon Mall and the Commons Mall, across from the Highland Union Building (HUB). Pierce Hall was built in the mid-sixties; the building and MEP infrastructure has never been upgraded and is in need of major upgrades. The building is constructed of reinforced concrete, reinforced masonry and precast concrete panels; in 2000 the building underwent a seismic renovation to upgrade the seismic criteria with multiple interior and exterior reinforced concrete shear walls.



Campus Academic Core

1.2 GUIDING PRINCIPLES

At the onset of the programming process, the Working Group was guided by UCR planning principles as Pierce Hall is one of two capital renewal and interior improvement projects being completed at one time. These principles provide common direction to all projects so at the completion of this process the building infrastructure will be significantly updated and improved and a portion of interior space will be identified and enhanced to directly support the faculty and faculty research. The Working Group also identified the need to maintain instructional laboratories capabilities during construction to address undergraduate core instructional requirements. Refer to Appendix A for UCR's Planning Principles.

Main Entrance

Capital Asset Strategies and Architects & Engineers worked collaboratively with the faculty work group to plan and steward the project. The Project Owner was identified to be the Executive Vice Chancellor/Provost with all space to be Provost Space and allocation and future space assignment to be approved by the EVC/Provost.

1.3 PURPOSE

The project's primary purpose is to benefit faculty research programs and activities. The priority is to develop research laboratories and research support spaces. The greatest space need is wet laboratories followed by dry laboratories. Solutions for the provision of non-research/faculty office space should include the possibility of relocation to other locations. Capital Assets

Strategies/Space Management will assist with space analysis and identification of alternative space locations for non research/faculty support spaces as requested or needed by the project.

A second project purpose is to increase instructional space by developing a lecture hall that conforms to the 2016 Physical Master Plan Study, reinforces a strong campus east/west pedestrian connectivity, maximizes the land bank for future development and creates a strong presence along the Commons Mall.

1.4 BUDGET

Capital Improvements are being completed by two projects simultaneously, are funded from two different sources and covers all phasing, surge space (if necessary) and relocation costs. The construction budget for the Pierce Hall Improvements that addresses MEP Systems Improvements and Classroom Addition is $28,455,000 with funding provided by General Fund Financing (GFF). The Pierce Hall Interior Improvements for interior upgrades had an original construction budget of $10,545,000, which is externally financed. The planning process started with a total construction budget of $39,000,000.

The process began with the understanding that the interior project will only renovate a portion of the building, and additional funds could be allocated to expand the overall scope. Instructional demands required increasing the total number of class laboratory student stations, which resulted in an increase in the Interior Improvement construction budget. Overall construction budget was revised as follows:

- Pierce Hall Improvements $28,455,000
- Pierce Hall Interior Improvements $13,760,000
- Total Construction Budget $42,215,000

1.5 METHODOLOGY

The process used to define the project scope included establishing Working Groups that met twice per month for a period of 3 months and held 9 workshops. The workshops included two separate advisory groups; one group addressed the existing Pierce Hall laboratories improvements and infrastructure upgrades, and the other addressed the classroom addition and site work.

MEP Systems Improvements and Interior Improvements:

In order to create a strong data base that would support appropriate decisions, existing building and site documentation was gathered and thoroughly reviewed. The A/E team and Eco-3D, an independent laser scanning company visited the site several times to document the existing conditions. Eco-3D developed a 3D model of the building that documented all visible MEP and structural elements. The model was used for concept planning, to inform the Revit model and provide area take-offs. Parallel to this effort a laboratory questionnaire was distributed to the faculty to obtain information on lab design preferences and to gain input towards defining an ideal lab.

3-D Model Infrastructure

A room by room infrastructure observation was done in order to document the building condition, develop renovation metrics, and to establish guidelines and priorities. In order to balance the scope of work with the available funds; the design team produced an existing condition matrix that was used as a tool to evaluate the building components. It was determined early on that the overall building condition is poor and is in need of renovation. Restrooms on all floors require upgrades to meet code, accessibility compliance, and to provide gender inclusive restrooms. The building envelop requires upgrades due to water intrusion, window and door air leakage and poor roof conditions. The MEP systems are over 60 years old; they are beyond their serviceable lifespan and need complete replacement in order to support program functions anticipated in the building, extend the useful life of the building and keep the building operational. Refer to section 4 for the Existing Condition Matrix.

The team developed three levels of renovation in order to create a hierarchy that aligns the scope with UCR's budget:

- Baseline Renovation: Provides shell and core infrastructure upgrades for mechanical, electrical and plumbing systems, accessibility upgrades to meet current ADA codes and hazardous materials abatement.
- Moderate Renovation: Includes all baseline items noted above in addition to improving the quality of the laboratory spaces by replacing floors, ceilings and wall finishes and casework.
- Full Renovation – Includes all items in the baseline and moderate levels and includes full MEP upgrades within the upgraded labs to meet the standards of modern laboratories.

The Working Group concluded that the building substantially requires a full renovation.

In order to properly allocate the funds as prescribed by UCR, the scope was additionally subdivided into two projects:

Pierce Hall Improvements:

Scope includes MEP systems improvements and the Classroom Addition. This project includes basement MEP replacement, vertical distribution to all floors and horizontal distribution within the corridors to a location that supports future laboratory renovations; VAV supply and return and Phoenix valves; fire sprinklers; corridor finishes and exterior glazing; first floor waterproofing; ADA upgrades within the areas being renovated; toilet upgrades; lactation room; hazardous materials abatement. The project also includes the classroom building addition and the related site work.

Pierce Hall Interior Improvements Scope:

Includes full renovation of a limited number of laboratories; improvements provide new fume hoods and sinks, flooring, paint, casework, LED lighting and MEP within the rooms; some offices will also be upgraded with new lighting and new finishes on walls and ceilings.

Classroom Addition and Site Work Scope:

The proposed location for the classroom addition was identified to be the north east corner of the Pierce Hall Building, adjacent to the existing loading dock. This location allows for lecture hall entry and identity from the Commons Mall. Scope includes widening of the existing east/west pedestrian pathway to the north and requires reconfiguration of the existing loading dock.

During the classroom addition workshops, the Working Group developed a total of five concepts, each of them resolving the site work component; of the five options studied, one conformed to the approved program and budget prescribed by the University, which is to develop a general assignment lecture hall building with 200 student stations; the other four options allowed for additional instructional space with multiple classroom and seating configurations.

The selected option includes a one story 200 seat lecture hall.

1.6 PHASING STRATEGIES

Four phasing options with appropriate construction timelines ranging from 24 to 58 months were considered by wing and by floor. Each option identified the construction duration to inform the Working Group on the impact to the building operations.

The Working Group agreed the best option to be a two-phase, 30 month construction duration:

- Phase 1 - 12 months
  - North Wing and South Wing: MEP Infrastructure all floors including basement;
  - North Wing: Interior renovation all floors
  - Classroom Addition, Loading Dock

- Phase 2 – 18 months
    - Center Wing: MEP Infrastructure all floors including basement;
    - Center Wing: Interior renovation first floor

This two-phase option allows for partial occupant relocation and a reasonable construction duration of 30 months. It also allows for the classroom addition and north / south wings infrastructure upgrades to be delivered together, with the center wing infrastructure upgrades and interior renovation to follow after surge space is established in the north and south wings.

This strategy also allows for instructional Labs on the north wing first and second floors and center wing first floor, to be used for teaching, which can later be converted to research.

1.7 PROGRAM

Laboratories:

The research lab program was developed with the Working Group based on lab prototype concepts derived from the MRB building and adapted to the specific needs of future Pierce Hall occupants.

Basic Lab Programming Principles:

- Open research lab suites that are flexible and adaptable and can easily be converted into smaller lab suites.
- Generic research lab prototypes instead of custom designs that meet specific needs.

Research Lab Types:

Multiple multidisciplinary lab types were discussed; the program includes Flex Type 2 and Flex Type 3. Flex Type 1 (Instrument) and Flex Type 4 (high density fume hood) were not used:

- Lab Flex Type 2:
  Research lab with medium fume hood density, with the MEP infrastructure capacity to increase fume hood capacity in the future. Four open lab modules are typically combined to create an open lab suite.
- Lab Flex Type 3:
  Single module multi-discipline research lab with one fume hood. Special research that is not conducive to an open research lab suite would take place and may consist of explosion hazards or unique use of chemicals that are better handled in a dedicated lab module.

Instructional Lab Type:

Four module teaching lab to accommodate 24 to 28 students with open, unobstructed sight-lines; fume hood density is 2 eight-foot chemical fume hoods per lab to match the current program. Consideration is to be given during the design phase to allow for teaching labs to be converted to research labs at a later date.

Lab Personnel Density and Capacity:

A lab personnel density analysis was done based on the available area and the projected program needs for the building. A lab unit was defined as a two or three module lab assigned to one Principal Investigator, that could accommodate 1 Principal Investigator (PI), 2 Post Doctoral (PD) research personnel, and 4 graduate students (GS).

The total capacity for research personnel for the building was arrived by allocating the following areas per PI:

PI office: 120 ASF
Research team shared office for 2 PD, 4 GS: 250 ASF
Research lab suite: 700 ASF
Research lab support: 700 ASF

Based on this information the building capacity by wing was developed:

North Wing- 4 PI; 8 PD; 16 GS
Center Wing- 10 PI; 20 PD; 40 GS
South Wing- 4 PI; 8 PD; 16 GS

Total Building Capacity: 18 PI; 36 PD; 72 GS

Classroom Addition:

Program includes a 6,600 GSF instructional building that will contain a total of 200 classroom stations and associated support spaces.

Basic programming principles include the provision of a new general assignment lecture hall that is technologically enhanced and flexibly configured to allow for interactive learning concepts in the fields of science, technology engineering and mathematics (STEM) programs.

1.8 CONCLUSION

The existing Pierce Hall Building Infrastructure and Interior Improvements require complete upgrades.

A preliminary budget assessment reflects that the UCR Budget will provide upgrades to the building infrastructure, limited interior renovation, a one story, 200 seat lecture hall, and loading dock reconfiguration.

The independent UCR Budgets are sufficient to support the shell and core upgrade of the existing building infrastructure, and partial Interior Improvements. These improvements include Instructional labs in the north wing first and second floors, research labs on the north wing third floor, and instructional labs and support in the center wing first floor.

This scope described above is based on a preferred construction phasing strategy of two phases and 30 month construction duration. The two phase strategy allows for partial relocation of building occupants and provides a cost effective construction duration.

The infrastructure upgrades and the limited Interior Improvement scope would occur concurrently in order to control the schedule duration. The phasing strategy, and existing Mechanical / Electrical Basements serving each wing require the renovation of each wing on all levels, at one time.

The design team will work with UCR to establish a relocation strategy in order to initiate the renovation program.

2.0

PROJECT CRITERIA

FRAMEWORK
GOALS
METHODOLOGY

2.1 FRAMEWORK

The University of California Riverside (UCR), is situated near the Box Springs Mountain, just 3 miles east of downtown Riverside, in the heart of the “Inland Empire”; the area includes western Riverside and San Bernardino counties and has become one of the fastest growing areas in California. UCR serves as one of the most important educational and cultural resources for the area.

Enrollment growth at the Campus has been significant and continued growth is expected. Over the past decade total Campus enrollment increased from 16,622 Headcount (HC) to over 21,651 HC in 2015, a 30% increase. UCR’s current focus is on improving the campus’ academic center and investing in the core Campus where there is existing infrastructure and where there can be faculty-student interaction across disciplines.

The University has undertaken a capital renewal and classroom addition project at the Pierce Hall building. This project provides upgrades to outmoded existing building systems, have reached the end of their service life or are too inefficient to warrant preservation. The existing building infrastructure systems upgrades are essential to benefit faculty research programs and to provide laboratories and research support spaces. The greatest need is wet laboratories followed by dry laboratories. The project also provides technologically-enhanced and flexibly configured classrooms in a general assignment classroom building that will meet the need for science, technology engineering and mathematics (STEM) programs. This will provide classroom space at the core of the Campus while maintaining the Pierce Hall building for laboratory research programs.

The infrastructure improvements will set the stage to realize future program based renovations within the existing facility to address evolving research needs, principally in the wet laboratory based science and engineering disciplines.

Funding available is limited and the budget is firm. The projects must deliver infrastructure upgrades, a one story 200 seat classroom addition and loading dock reconfiguration and interior improvement scope within the available budget.

2.2 GOALS

The goals of the Pierce Hall Improvements project are as follows:

- Upgrade the building systems, including Heating Ventilation and Air Conditioning (HVAC), electrical distribution, fire protection, hazardous materials abatement, piped services, and functional equipment.
- Deliver energy efficient building systems that respond to changing technological and functional requirements for science and engineering programs, while lowering operational costs.

- Design research and instructional laboratories that allow for maximum flexibility and adaptability.
- Provide new general assignment classrooms in a central campus location to support approximately 200 students. This will provide STEM classroom space at the core of the Campus while maintaining the Pierce Hall building for laboratory research and teaching programs.
- Reconfigure the existing loading dock service area to support the new classrooms and improve pedestrian circulation and access.

2.3 METHODOLOGY

A process was established to document existing conditions, develop a program and prioritize the project scope:

- Survey the building infrastructure for all systems, site, envelope integrity; document existing conditions.
- Provide a room by room infrastructure assessment to document the existing building physical condition.
- Document existing space utilization including occupied and vacant spaces.
- Evaluate and document Building Code and Fire & Life Safety deficiencies.
- Evaluate and document accessibility and gender inclusive compliance.
- Using a questionnaire as a lab planning tool, gather information from the faculty to define lab design preferences and gain input towards defining an ideal lab.
- Define lab types; identify functional requirements for each lab type, fume hood density and number of researchers anticipated; use MRB project laboratory prototypes as a baseline discussion on the level of development for the lab modules.
- Develop a laboratory program that works within the existing structure that defines the development of research and instructional labs.
- Analyze the site to allow for the addition of a classroom building, expansion of the east/west pedestrian pathway and the reconfiguration of the loading dock.
- Develop multiple options for the classroom to formulate viable solutions that will meet the project’s goals and meet prescribed budgets.
- Generate multiple phasing options with construction durations focusing on an option that will minimize disruption to the building users and can deliver the project on budget.
- Develop cost models based on program variables, historical data and limited quantity take-offs.
- Reconcile cost model against the project budget to determine the level of renovation that is achievable.

3.0

EXISTING BUILDING PROPERTIES

OVERVIEW
BUILDING INFORMATION
EXISTING AREA
SITE PLAN
FLOOR PLANS

3.1 OVERVIEW

The Pierce Hall Physical Sciences Complex was built in 1965 with 2-stories at the south wing and 3-stories at the center wing and included a sub-grade basement with multiple mezzanines. In 1966 the University added the 3-story north wing. Both structures combine the use of reinforced concrete, reinforced masonry and precast concrete panels. A comprehensive seismic retrofit was completed in 2000; it involved the addition of reinforced concrete shear walls at the perimeter of the buildings.

West Entrance at Lobby

The total building gross area (GSF) including south, center and north wings is 114,407 GSF. The building assignable area (ASF) is 66,735 SF. The basement level houses mechanical, electrical and plumbing equipment for the building and each wing is served independently from systems housed directly below.

The existing mechanical system consists of air handling units and air distribution, chilled and space heating hot water, general building exhaust, laboratory exhaust, chilled industrial water, steam and HVAC control systems.

The existing plumbing system consist of domestic and industrial cold and hot water, soil and waste drainage, storm water drainage, natural gas, acid resistant waste, laboratory air and vacuum, distilled water, and a sprinkler system serving the basement level.

Electrical unit substations are provided in the basement Electrical Room under each wing to support the 208/120 Volt loads of the associated wing. The building is served by a 95KW emergency generator located in the areaway adjacent to the electrical room under the center wing, and by a 15KW emergency generator located on the roof of the center wing.

Refer to sections 6, 7, 8 and 9 for Structural and MEP detailed documentation.

3.2 BUILDING INFORMATION

Construction Type:	Type III A 1-hour
Occupancy Type:	B
Height:	North and Center Wings: 3-story Building: 41'-6" South Wing: 2-story Building: 28'-6"
Deck Type:	Concrete slab thickness 4 ½" typical Roof - concrete 4 ½"
Exterior Façade:	4" Precast Concrete Panels 9" Reinforced Masonry Walls 6" Reinforced Concrete Walls

South Wing Façade at the Carillon Mall

South West Corner at Intersection of Carillon Mall and Commons Mall

Structural Spacing: North Wing: Beam / Column spacing 22’
Center Wing: Joist spacing at 7’-4” and Beam / Column spacing 29’

South Wing:
N/S wing: Joists spaced at 5’/Beam & Column at 10’
E/W wing: Beams spaced at 5’/Columns at 6’

Fire Rating: 2 Hour rated shaft walls
Deck rating: 1 hr

Fire-Sprinklers: Non-Sprinklered, except for Basement Level.

Windows: Steel mullion ribbon windows; fixed single pane glass with resilient gaskets set into a metal reglet embedded in the concrete.

Wall / Stud Type: Plaster on lath over metal studs

Corridor Ceilings: Tunnel construction with acoustical glued-on tile.

Lab Depths:

Floor / Wing	1ST	2ND	3RD
North Wing	27’	26’	26’
Center Wing	30’	29’	29’
South Wing	21’	21’	

Floor to Floor Height:

First Floor	12’-8” (South, North, Center Wing)
Second Floor	12’-8” (South, North, Center Wing)
Third Floor	11’-6” (North, Center Wing)

Elevator: Single Hydraulic Unit

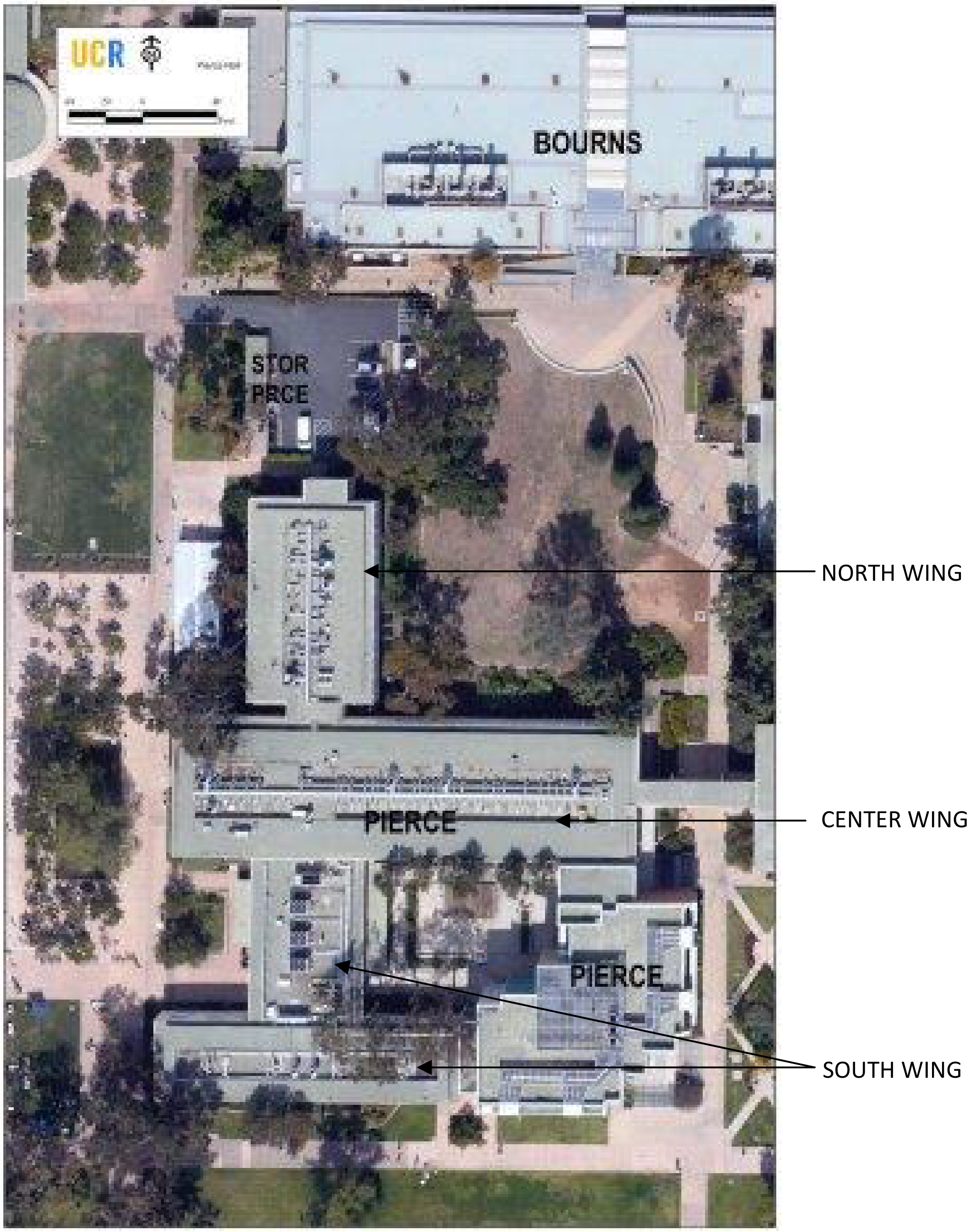
Stair Construction: North Wing:
Exterior - Reinforced concrete
Center Wing:
Interior - Reinforced concrete and steel
South Wing:
Interior - Reinforced concrete and steel
Exterior - Reinforced concrete

Loading Dock and Service Area

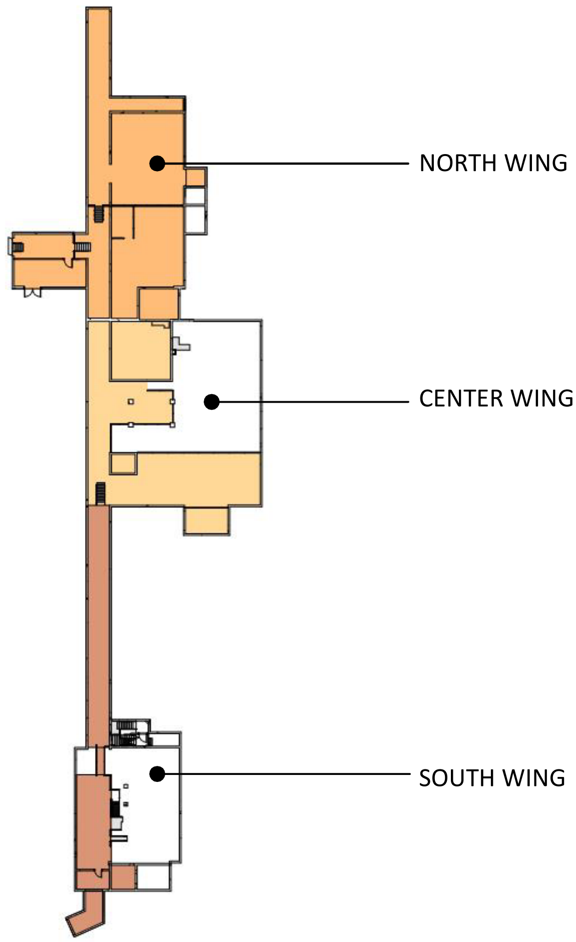
3.3 EXISTING AREA

Refer to Appendix G for:
- Existing Building Gross Area (GSF) by wing and by floor
- Existing Assignable Area (ASF) by wing, floor and room type

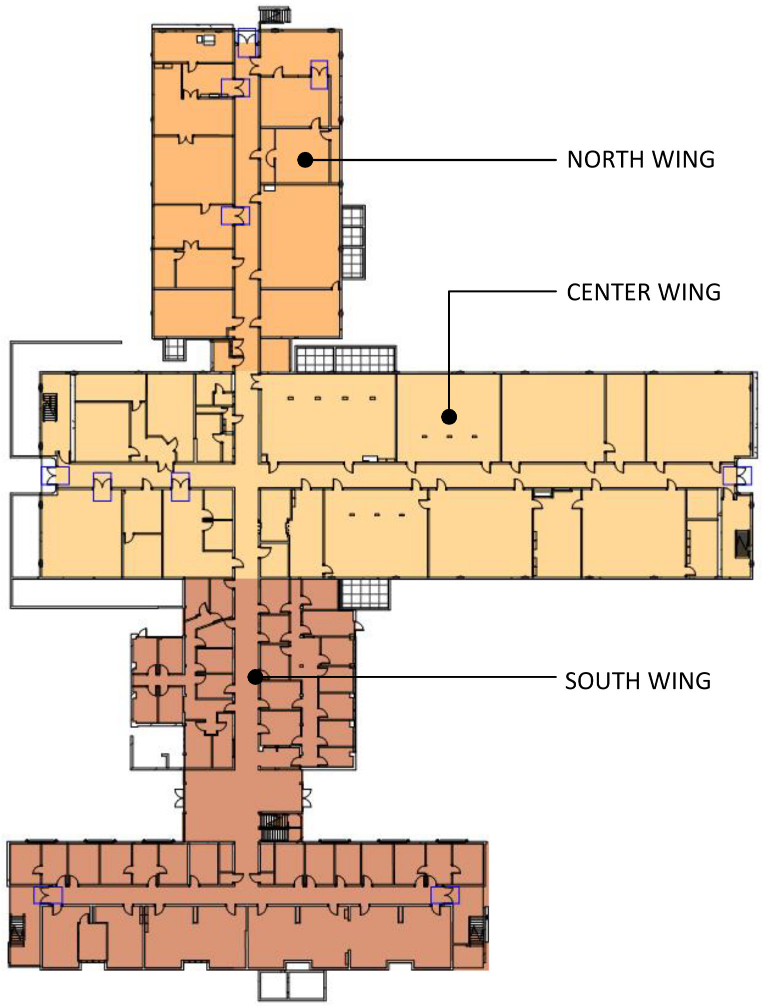
3.4 SITE PLAN


UCR
BOURNS
STOR
PRCE
NORTH WING
PIERCE
CENTER WING
PIERCE
SOUTH WING

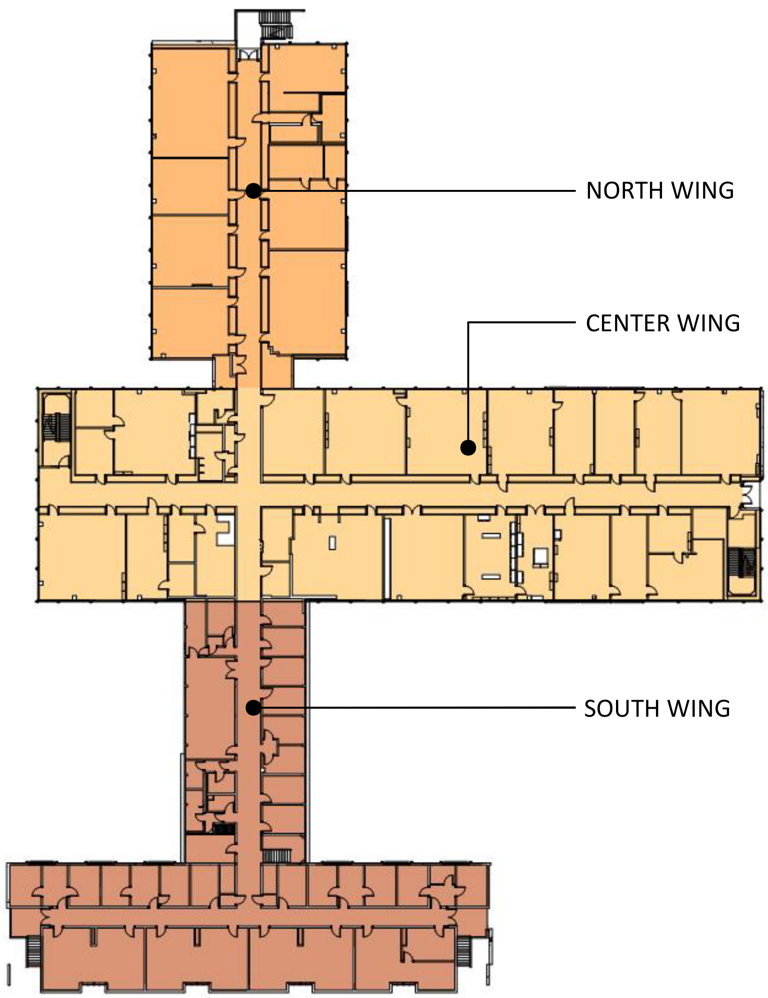
3.5 FLOOR PLANS



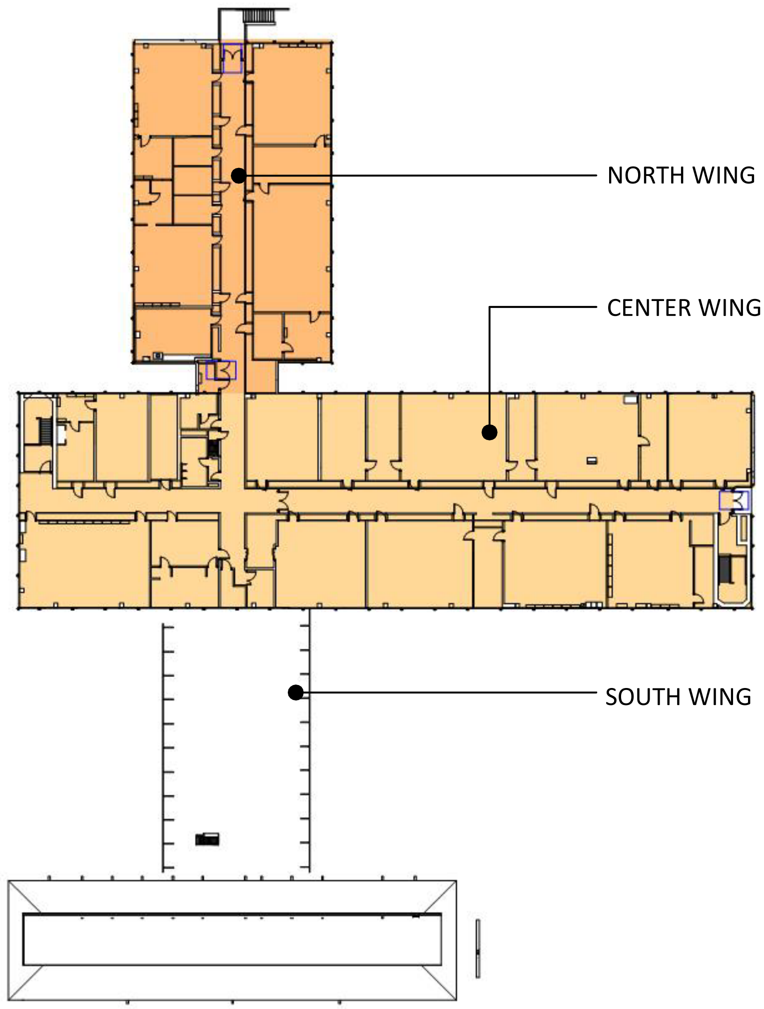
UPPER BASEMENT AND LOWER



FIRST FLOOR



SECOND FLOOR



THIRD FLOOR

4.0

BUILDING EVALUATION

PROCESS
ARCHITECTURAL
CODE ASSESSMENT
CONCLUSION
EXISTING CONDITIONS MATRIX
EXISTING CONDITIONS FLOOR PLANS

4.1 PROCESS

4.1.1 Introduction

The existing Pierce Hall Building is located at the northeast corner of the intersection of the Carillon Mall and the Commons Mall in the core of the campus. The building MEP infrastructure and a significant portion of the interior spaces have not been upgraded since its original construction in the mid-sixties.

The purpose of this evaluation is to inform the Design Team on the building condition, code deficiencies, programmatic deficiencies, identify priorities, and establish a guideline for the renovation of the building within the prescribed budget.

Intersection at Commons and Carillon Mall

4.1.2 Methodology

The Design Team reviewed the record drawings made available by the University. The architects and engineers conducted a survey of the existing building. The team documented their observations in an Existing Conditions Matrix containing ten categories that serve as the main evaluation topics. Each room was photographed and inventoried to assess current use, accessibility, fire and life safety, architectural building envelope, interiors, lab and MEP components. The room by room survey was limited to those elements that were visible. The Engineers completed an individual tabulation form for all major MEP equipment. Facilities and Faculty participated in several of the site walks and provided additional information on the building use and program.

North Wing View

Concurrently, UCR contracted Eco-3D, an independent laser scanning company to survey the building, roof and above ceiling Mechanical, Plumbing and Electrical components. The building was scanned and a 3D Revit model was developed to create floor plan backgrounds for documenting existing conditions, current room use, fume hood densities, and identification of vacant rooms.

South View From Commons Mall

The result was a building wide room by room assessment, documented on the floor plans and in the Existing Conditions Matrix.

The information gathered provided a data base that established the groundwork for the Working Group to understand the overall existing building condition and assisted in the development of 3 possible levels of renovation for the building. This renovation hierarchy was instrumental for the Working Group to align the proposed scope of work with UCR's prescribed budget. After completion of the Matrix, a walk-through with the faculty helped further refine the documentation to confirm whether the existing spaces met the program needs.

The three levels of renovations include:

1 Baseline: Category identifies renovation areas requiring ADA, MEP Infrastructure upgrades and hazardous material abatement. Upgrades are limited to fire sprinklers, mechanical, electrical and plumbing systems replacement; accessibility upgrades in the areas of being renovated and abatement of hazardous materials as required for infrastructure upgrades. The shell and core infrastructure upgrades provide services vertically to each floor to a location that will be readily available to support future laboratory renovations.

2 Moderate: Category identifies areas that require the baseline scope noted above and provides qualitative improvements within the labs including new laboratory casework and floor, wall and ceiling finishes.

3 Full Renovation: Category identifies areas that require baseline and moderate scope noted above as well as a complete upgrade of MEP systems within the labs being renovated. This Category also identifies areas that do not meet the department's program and require full renovation to conform to the program.

Refer to Sections 4.5 & 4.6 for the Existing Conditions Matrix and floor plans.

4.2 ARCHITECTURAL

The Architects walked the building and evaluated the main architectural components. Each system was examined and documented, and a value system was assigned to each element in order to assess its condition.

Good: Acceptable condition upgraded in recent past
Fair: Requires new finishes, casework and partial MEP system upgrades
Poor: Original un-renovated building component that has outlived its useful life, and requires full upgrade.

Main Entrance

4.2.1 Building Exterior

Envelope:

Pierce Hall's structure is reinforced concrete, with an envelope of reinforced masonry walls and precast concrete panels. During the seismic upgrade in 2000, exterior shear walls were added. Continuous ribbon windows occur on the first floor; clerestory windows occur on the third floor. Windows are single pane with silicone sealed joints, set in a metal reglet. Exterior window system assembly is deficient.

The first floor is partially below grade. A planter with a built-in irrigation system abuts the building around the perimeter. Water damage was observed along the interior face of the exterior wall in areas that abut the planter.

Roof:

The existing built-up roofing on rigid insulation has not been replaced since it was originally installed; the seals at the roof drains are cracked and leaks are visible from the labs below.

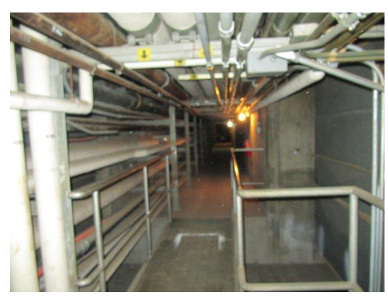
Roof

A mechanical well runs the length of the building roof at each wing. This area houses the exhaust fans and conceals equipment, and establishes a transition for the duct work to exit the shafts directly to the exhaust fans. Exterior paint within the mechanical well is peeling.

4.2.2 Interior

Basement Level:

The basement runs the length of the building in the north south direction. Each wing of the building has a basement component that contains mechanical, electrical and plumbing for that wing. Fresh air intake and mechanical equipment access are from adjacent areaways.

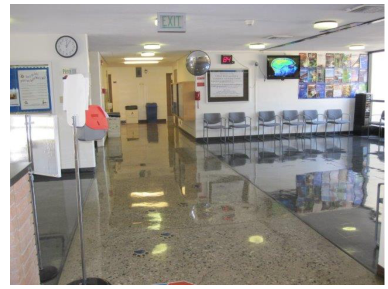


Basement Mezzanine

Lobby:

The lobby is located in the south wing at the main entrance to the building from the Commons Mall and serves as the main area for greeting and waiting, administrative queuing and display. Stairs to the second floor are open to the Lobby. The lobby is open to the east and west, with storefront glass and glass exit doors.

Finishes include terrazzo floors, painted drywall with brick veneer accent on low partitions and acoustical tile ceiling. The finishes are in fair condition.



Main Lobby

Corridors:

Corridors are 8 foot-wide with concrete shear walls on both sides. Acoustical ceiling tiles are stained and falling in several locations; there are visible signs of water damage on the walls. Existing finishes include vinyl asbestos floor tile with rubber topset base; painted plaster skimcoat walls; acoustical glue-on tile and both semi-recessed and surface mounted fluorescent lighting. Corridor finishes have not been updated and are in poor condition.

Corridor

Restrooms:

Men and women's restrooms are located on the center wing on all three floors. The second floor has additional restrooms in the south wing. The restrooms do not meet accessibility requirements or UCR standards for gender inclusive facilities.

Existing finishes include ceramic tile floor, ceramic tile wainscot 4'-0"; painted cement plaster above wainscot; painted cement plaster at ceiling; porcelain sinks and metal restroom partitions. Restroom finishes are in fair condition.

Typical Restroom

Teaching Labs, Research Labs, Support Rooms:

Original lab finishes include vinyl asbestos floor tile with rubber topset base; sheet vinyl tile in the newer labs; painted plaster skim-coat walls; open ceilings exposed to structure above with fluorescent pendant light fixtures; wood veneer casework and epoxy countertops.

There are seven teaching labs located on the first floor; three of these labs are in good condition as they were renovated in early 2000. The remaining original teaching labs are in poor condition. Most of the wood fume hoods have been abandoned; they are outdated and do not pass current performance standards for chemical resistance and are not flame retardant; epoxy sinks, countertops and plumbing fixtures have significant rust and show extensive chemical damage; most finishes and casework are in poor condition.

Typical Research Lab

The majority of the research labs on the second and third floors have not been updated. Bench tops indicate chemical deterioration and the casework wood finish is in poor condition. The floor is damaged throughout. Floor recessed valve boxes are open and the cover treatment is warped. Original wood fume hoods lack lighting and sashes are inoperable.

Several research labs on the second and third floors were upgraded 15 years ago; the casework is in fair condition but lacks seismic bracing; metal fume hoods appear to be in good condition.

TA Tutoring Space:

Labs on the second floor north wing house TA Tutoring spaces. These were wet labs that were modified for TA Tutoring purposes; they do not meet the current program needs for wet lab space. All systems are capped off at the walls. The typical spaces have carpet flooring; painted plaster skim-coat walls; ceilings are open to the structure above with fluorescent pendant fixtures. Finishes are in good condition.

Offices:

Offices on the first floor south wing north of the Lobby have been renovated; the finishes are in good condition. They are carpeted with suspended acoustical tile ceilings and painted drywall. There are isolated locations where water damage is evident on ceiling tiles. The lighting fixtures are in good condition but are not energy efficient. Most electrical wiring devices are obsolete.

Offices on the first floor south of the lobby and second floor south wing received minor updates. Finishes in these areas are fair. They typically have the original vinyl asbestos tile flooring with rubber topset base; painted plaster skim-coat walls and ceilings are open to the structure above, with fluorescent pendant fixtures. Several labs in the south wing have now been repurposed for office use; these are in good condition.

Conference Rooms:

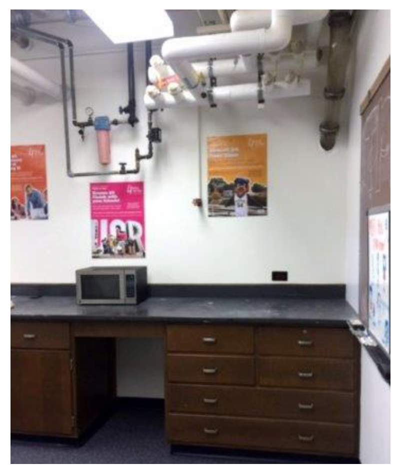
The main conference room is on the second floor south wing office area. There are also several small conference rooms within the lab modules. Lab systems have been capped in these rooms. Conference rooms are carpeted, painted plaster walls, and acoustical tile ceiling with fluorescent fixtures. There is water damage in several conference rooms both at the exterior wall and at the ceiling. With the exception of water damaged finishes, conference room finishes are in good condition.

Vertical Shafts:

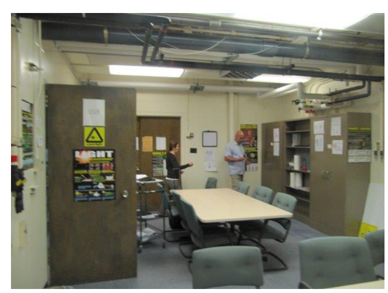
The HVAC system runs vertically through the building in large shafts located adjacent to the stairwells and restrooms. Lab exhaust runs vertically through shafts within the interstitial space between the labs and the corridor. The shaft walls appear to be in good condition.

Research Lab

Instructional Lab



Conference / Meeting Room



Wet Lab Converted to a Conference Room

4.3 CODE ASSESSMENT

4.3.1 Applicable Codes

This project has significant health and safety regulations due to regulatory oversight. In order to develop a guideline for compliance, the design team developed a list of regulatory codes and standards that apply to the project. UCR is under the jurisdiction of the California Building Code (CBC); the Research Labs are regulated by the National Fire Protection Association (NFPA).

The following codes and standards were used to analyze current compliance and to define future parameters related to Fire and Life Safety, Accessibility, Laboratory, Structural and MEP compliance throughout the building.

CBC 2013 Edition
CMC 2013 Edition - California Mechanical Code
CEC 2013 Edition - California /Electrical Code Title 24
CFC 2013 Edition - California Fire Code
CPC 2013 Edition - California Plumbing Code
California Energy Code, Title 24 2010 Edition
NFPA 45 – Fire Protection of Laboratories Using Chemicals
NFPA 30 – Flammable and Combustible Liquids Code
NFPA 70 – National Electrical Code (2008)
NFPA 101 – Life Safety Code (2006)
NFPA 110 – Standard For Emergency and Standby Power Systems (2010)
ANSI/AIHA Z9.5 Laboratory Ventilation
ANSI Z358.1 – 2004 American National Standard for Emergency Eyewash & Shower Equipment
ASHRAE 2011 HVAC Applications Handbook
ASHRAE 62.1 Standard entitled "Ventilation of Acceptable Indoor Air Quality"
ASHRAE 55-2004 Standard entitled "Energy Standards for Buildings Except Low-Rise Residential Buildings"

4.3.2 Building Code Analysis

The design team analyzed the building for building classification for occupancy and construction type, based on current codes.

Type of Construction, Allowable Building Heights and Areas

- The building construction type is assumed to be a minimum of Type III A based on Table 503 of CBC once the building is fully sprinklered. The building height is limited to 65 feet, can have a maximum of 5 stories and a maximum floor plate per floor of 57,000 SF.
- The fire resistance rating for floor construction and associated secondary member is 1 hour based on Table 601 of CBC.

Building Occupancy

Based on Section 304 of CBC the building occupancy is group B, for business use including educational occupancies for students above the 12th grade. Labs must follow NFPA Guidelines for chemical storage. Quantities listed in tables CBC 2013 Table 307.1(1), 207.1(2) must be maintained to meet the B occupancy requirements.

Corridor Fire Resistance Rating

In accordance with Table 1018.1 the interior corridor walls are not required to be rated throughout; this is based on the building being fully sprinklered.

Occupant Load Analysis

The analysis is based on a occupant load factor of 50 SF per person in accordance with Table 1004.1.2, which identifies the occupant load of the building for laboratory educational use.

Plumbing Calculations

Based on UPC 2013 code, building area and occupant load factor noted above an evaluation was done of the existing and proposed plumbing fixtures:

Area: 66,735 ASF / 50 SF per occupant = 1335 occupants; assumes 668 male and 668 female.

Existing Fixture Count

Fixture	Male	Female	Total
Water Closets	6	6	12
Urinals	9	0	9
Lavs	9	6	15
Drinking Fountains			3

Minimum Fixture Requirements

Fixture	Male	Female	Total
Water Closets	5	13	18
Urinals	5	0	5
Lavs	7	8	15
Drinking Fountains			9

4.3.3 Fire and Life Safety

Fire Protection:

Only the basement level has a fire sprinkler system. The building is equipped with a fire alarm system.

Non-Structural Seismic anchorage:

There are no visible seismic restraints for duct support, equipment is not seismically anchored.

Stairways:

Pierce Hall is served by exterior and interior stairs. Exterior stairs at the north and southwest corner of the building are open and no fire rating is required. Interior stairs for access to all three levels appear to meet the required 2-hour rating separation. The interior stairs from the lobby to the second floor are open and meet code intent. Lobby stairs also access the basement.

Elevator:

The elevator is located directly off the corridor on all three levels; there is no smoke protection.

4.3.4 Accessibility

Parking:

Accessible parking will be provided within the Campus parking inventory.

Exterior Ramps and Handrails:

Requires a survey to establish accessibility compliance.

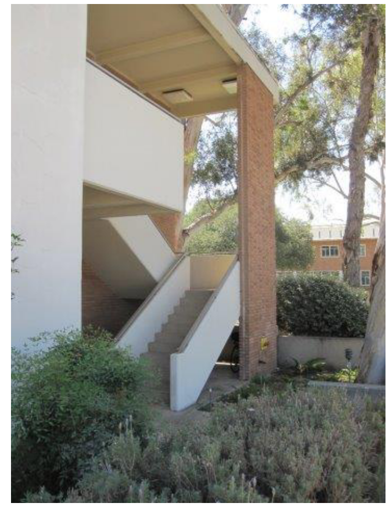
Entries:

There are entrances at the end of the north, south and center wings and at the main lobby. Main lobby can be accessed by ramp. The slope appears to comply with code; the handrail extensions are deficient. The entrance doors have push plate access and panic hardware; exterior pull hardware is not compliant.

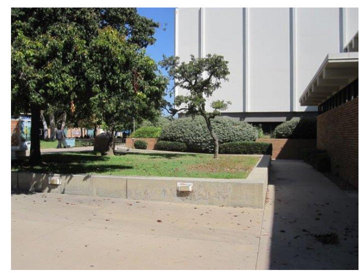
Stairways:

The stairs' width and landings meet code. They do not meet the following code requirements:

- 12" handrails extensions beyond the bottom tread + the length of the tread.

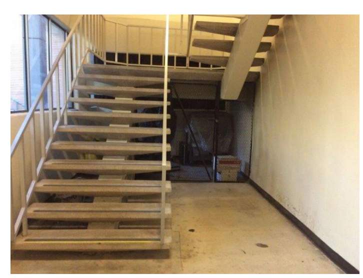


South West Exterior Stairs



Ramp, Main Entry

Main Entry Door at Lobby



Typical Interior Door

- Guardrail opening is maximum 4” and 42” in height.
- Guardrails required where access below the stairs is lower than 7’-6” clearance.
- Maximum riser opening is 4”, existing risers are open and are 7” typically,

Corridor:

Display cabinets protrude beyond a maximum of 4” into the corridors.

Interior doors:

The majority of existing doors have the original hardware, except at a few locations where areas were renovated. Required floor clearances at the push/pull floor areas of most doors are not in compliance. The typical lab doors are recessed off the corridor between existing shafts and are limited by the adjacent shear walls. Most lab areas require widening of concrete shear walls to accommodate accessibility floor area clearances.

Elevators:

The elevator cab, handrail and controls require minimal accessibility code upgrades for full compliance.

Signage:

Room signage is typically mounted above the doors. Signage is required to be mounted on the swing side of the door at 60” above finish floor and require raised text, braille, and visible color contrast.

Drinking Fountains and Telephones:

Existing public telephone is not compliant; if provided TTY requirements must be implemented.

Drinking fountains are not compliant. They are required to be dual height and recessed off the corridor, maximum projection into the corridor is 4”.

Restrooms:

Restrooms do not meet current accessibility codes; clear floor area at the side of doors is insufficient, turnaround spaces and reach for accessories are deficient throughout.

Typical Interior Door

Typical Non-Compliant Drinking Fountain

Typical Non-Compliant Water Closet

4.4 CONCLUSION

The overall building is in poor condition; the infrastruture requires a complete upgrade and there are significant accessibility and fire and life safety code deficiencies throughout. The following is a partial list of requirements and recommendations:

Requirements:

- Provide fire sprinklers throughout the building.
- Install compliant handrails at the exterior ramps.
- Install steel infill panels at open stair risers, replace guardrails and handrails, including first floor landing protection for proper head clearance.
- Provide color contrasting stripping at top and bottom of stairs.
- Provide a smoke curtain at the elevator doors at each level.
- Provide floor area clearances and door hardware for accessibility at areas being renovated.
- At each Instructional Lab, provide one accessible hood, one accessible sink and one compliant workstation.
- At Research labs being renovated, provide one accessible hood, one accessible sink and one adjustable work bench.
- Provide compliant drinking fountains.
- Remove public telephones from the building.
- Provide compliant restrooms on each floor with code compliant fixture count and add a Gender Inclusive restroom.
- Provide path of travel signage.
- Provide compliant room signage in areas being renovated.
- In order to maintain the current building occupancy, develop a chemical inventory list for all labs being renovated that is in alignment with quantities prescribed by code.

Recommendations:

- Upgrade the MEP systems throughout the building on all floors to allow for current and future renovations.
- Replace all single pane glazing with insulated glass to properly seal the building envelope from air and water intrusion.
- Install below grade waterproofing at first floor perimeter planters.
- Replace roofing in its entirety.
- Replace fluorescent fixtures with LED fixtures in corridors and in areas being renovated. Refer to Electrical Section for details.
- Upgrade teaching labs on the first floor center wing, and create teaching labs on the first and second floor of the north wing.
- Renovate research labs following the established guidelines and within the University's budget.

Refer to Sections 6, 7, 8 and 9 for detailed evaluation of the existing building infrastructure for structural, mechanical, plumbing and electrical components.

Typical Non-Compliant Restroom Entrance and Accessories

Typical Instructional Lab

4.5 EXISTING CONDITIONS MATRIX

The following matrix includes a room by room assessment broken down into 9 categories: Overall; Current Use Meets Program Needs; Accessibility; Architectural Finishes; Laboratory Casework; Laboratory Fume Hoods; Mechanical: Plumbing; Electrical.

ROOM ID	ROOM TYPE	OVERALL	MEETS PROGRAM NEEDS	ACCESSIBILITY	FINISHES	LAB - CASEWORK	LAB - FUME HOODS	MECHANICAL	PLUMBING	ELECTRICAL
1104	OFFICE - SHARED	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1104A	OFFICE - PRIVATE	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1105	OFFICE - SHARED	3-Full Renovation	N	3	2	-	-	3	3	3
1105A	OFFICE - PRIVATE	3-Full Renovation	N	3	2	3	3	3	3	3
1106	OFFICE - PRIVATE	2-Moderate Renovation	Y	3	2	-	-	3	-	-
1111	LAB - WET 1	3-Full Renovation	Y	3	3	3	3	3	-	3
1114	OFFICE - SHARED	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1114A	OFFICE - PRIVATE	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1114B	OFFICE - PRIVATE	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1117	LAB - WET 1	3-Full Renovation	Y	3	3	3	3	3	3	3
1120	OFFICE - PRIVATE	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1125	LAB - WET 1	3-Full Renovation	Y	3	3	3	3	3	3	3
1129	OFFICE - SHARED	3-Full Renovation	N	3	2	3	-	3	3	3
1132	OFFICE - PRIVATE	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1134	OFFICE - PRIVATE	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1136	OFFICE - SHARED	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1139	LAB - WET 1	3-Full Renovation	Y	3	3	3	3	3	3	3
1140	OFFICE - PRIVATE	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1141	LAB - WET 1	3-Full Renovation	Y	3	3	3	3	3	3	3
1144	OFFICE - PRIVATE	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1148	OFFICE - SHARED	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1148A	OFFICE - PRIVATE	2-Moderate Renovation	Y	3	2	-	-	3	-	3
1149	LAB - WET 1	3-Full Renovation	Y	3	3	3	3	3	3	3
1219	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1219A	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1219B	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1219C	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1219D	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1219E	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1220	CORRIDOR	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1221	LOBBY	2-Moderate Renovation	-	2	1	-	-	3	-	2
1220A	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1220B	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1220C	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1220D	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1220E	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1220F	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1220G	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1223	OFFICE - SUPPORT	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1225	CORRIDOR	1-Baseline Renovation	Y	1	1	-	-	3	-	3
1225A	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1225B	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1225C	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2

FIRST FLOOR

EXISTING CONDITIONS MATRIX (CONT.)

ROOM ID	ROOM TYPE	OVERALL	MEETS PROGRAM NEEDS	ACCESSIBILITY	FINISHES	LAB - CASEWORK	LAB - FUME HOODS	MECHANICAL	PLUMBING	ELECTRICAL
1225D	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1225E	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1225F	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1225G	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1227	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1229	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1231	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1233	OFFICE - PRIVATE	1-Baseline Renovation	Y	1	1	-	-	3	-	2
1239	IT	1-Baseline Renovation	Y	1	1	-	-	3	3	3
1305	LAB - INSTR	3-Full Renovation	N	1	1	-	-	3	3	3
1309	OFFICE - SHARED	3-Full Renovation	N	1	1	-	-	3	3	3
1309A	OFFICE - PRIVATE	3-Full Renovation	N	1	2	-	-	3	3	3
1312	CORRIDOR	3-Full Renovation	N	1	2	-	-	3	-	2
1312A	LAB - INSTR	3-Full Renovation	N	1	2	-	-	3	3	2
1312B	LAB - INSTR	3-Full Renovation	N	1	2	-	-	3	3	2
1312C	LAB - INSTR	3-Full Renovation	N	1	2	-	-	3	3	2
1315	OFFICE - PRIVATE	3-Full Renovation	N	3	1	-	-	3	3	3
1315A	OFFICE - PRIVATE	3-Full Renovation	N	3	1	-	-	3	3	3
1315B	OFFICE - PRIVATE	3-Full Renovation	N	3	1	-	-	3	3	3
1326	LAB - WET 3	1-Baseline Renovation	Y	3	1	1	1	3	3	3
1329	LAB - SUPPORT	2-Moderate Renovation	Y	3	2	3	3	3	3	3
1333	LAB - WET 3	1-Baseline Renovation	Y	3	1	1	1	3	3	3
1340	LAB - WET 2	1-Baseline Renovation	Y	3	1	1	1	3	3	3
1347	LAB - WET 3	3-Full Renovation	Y	3	3	3	3	3	3	3
1347A	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
1352	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	3	3	3	3
1352A	LAB - WET 3	3-Full Renovation	Y	3	3	3	-	3	3	3
1363	LAB - WET 3	3-Full Renovation	Y	3	3	3	3	3	3	3
1363A	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
1368	LAB - WET 3	3-Full Renovation	Y	3	3	3	3	3	3	3
1417	LAB - WET 2	3-Full Renovation	Y	3	3	3	3	3	3	3
1418	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	3	3	-	3
1423	LAB - WET 2	3-Full Renovation	Y	3	3	3	3	3	3	3
1424	LAB - SUPPORT	3-Full Renovation	N	3	3	-	-	3	3	3
1424A	OFFICE - SUPPORT	3-Full Renovation	N	3	3	-	-	3	3	3
1425	OFFICE - SHARED	3-Full Renovation	N	3	3	-	-	3	3	3
1434	LAB - FLEX 1 INSTR	3-Full Renovation	N	3	3	3	-	3	3	3
1428	LAB - DRY 1 COMP	3-Full Renovation	N	3	3	3	3	3	3	3
1437	LAB - FLEX 2	3-Full Renovation	Y	3	3	3	2	3	3	3
1441	LAB - FLEX 2	3-Full Renovation	Y	3	3	-	-	3	3	3
1444	LAB - FLEX 2	3-Full Renovation	N	3	3	3	3	3	3	3
1444A	LAB - DRY 1 COMP	3-Full Renovation	N	3	3	-	-	3	3	3
1444B	LAB - FLEX 2	3-Full Renovation	N	3	3	-	-	3	3	3

FIRST FLOOR

EXISTING CONDITIONS MATRIX (CONT.)

ROOM ID	ROOM TYPE	OVERALL	MEETS PROGRAM NEEDS	ACCESSIBILITY	FINISHES	LAB - CASEWORK	LAB - FUME HOODS	MECHANICAL	PLUMBING	ELECTRICAL
2100	OFFICE - SHARED	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2100A	OFFICE - PRIVATE	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2100B	OFFICE - PRIVATE	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2101	OFFICE - SHARED	3-Full Renovation	N	3	1	-	-	3	3	3
2109	OFFICE - SHARED	3-Full Renovation	N	3	1	-	-	3	3	3
2112	OFFICE - SHARED	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2112A	OFFICE - SHARED	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2112B	OFFICE - SHARED	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2115	OFFICE - SHARED	3-Full Renovation	N	3	1	-	-	3	3	3
2120	OFFICE - PRIVATE	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2121	OFFICE - SHARED	3-Full Renovation	N	3	1	-	-	3	3	3
2125	OFFICE - SHARED	3-Full Renovation	N	3	2	3	3	3	3	3
2126	OFFICE - SUPPORT	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2133	OFFICE - SHARED	3-Full Renovation	N	3	2	3	3	3	3	3
2134	OFFICE - SHARED	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2134A	OFFICE - PRIVATE	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2134B	OFFICE - PRIVATE	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2137	OFFICE - SHARED	3-Full Renovation	N	3	2	-	-	3	3	3
2144	OFFICE - SUPPORT	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2144A	OFFICE - PRIVATE	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2144B	OFFICE - PRIVATE	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2144C	OFFICE - SUPPORT	1-Baseline Renovation	Y	3	1	-	-	3	3	3
2145	OFFICE - PRIVATE	3-Full Renovation	N	3	2	-	-	3	3	3
2206	OFFICE - SHARED	1-Baseline Renovation	Y	2	1	-	-	3	3	3
2209	OFFICE - PRIVATE	1-Baseline Renovation	Y	2	1	-	-	3	3	3
2213	OFFICE - PRIVATE	1-Baseline Renovation	Y	2	1	-	-	3	3	2
2218	OFFICE - SUPPORT	1-Baseline Renovation	Y	2	1	-	-	3	3	3
2219	LAB - SUPPORT	3-Full Renovation	N	3	1	-	-	3	3	2
2219A	OFFICE - PRIVATE	3-Full Renovation	Y	3	1	-	-	3	3	2
2219B	OFFICE - PRIVATE	3-Full Renovation	Y	3	1	-	-	3	3	2
2225	OFFICE - PRIVATE	3-Full Renovation	Y	2	1	-	-	3	-	2
2226	OFFICE - SUPPORT	1-Baseline Renovation	Y	2	1	-	-	3	3	3
2227	OFFICE - PRIVATE	1-Baseline Renovation	Y	2	1	-	-	3	3	2
2228	LAB - SUPPORT	3-Full Renovation	N	3	3	-	-	3	3	3
2231	OFFICE - PRIVATE	1-Baseline Renovation	Y	2	1	-	-	3	3	2
2232A	LAB - SUPPORT	3-Full Renovation	N	3	3	3	3	3	3	3
2233	OFFICE - PRIVATE	1-Baseline Renovation	Y	2	1	-	-	3	3	2
2239	IT	1-Baseline Renovation	Y	2	1	-	-	3	3	2
2301	LAB - INSTR	3-Full Renovation	N	3	2	-	-	3	3	3
2306	LAB - SUPPORT	3-Full Renovation	N	3	3	3	-	3	3	3
2313	LAB - SUPPORT	3-Full Renovation	N	3	2	3	3	3	3	3
2313A	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
2314	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	3	3	3	3

SECOND FLOOR

EXISTING CONDITIONS MATRIX (CONT.)

ROOM ID	ROOM TYPE	OVERALL	MEETS PROGRAM NEEDS	ACCESSIBILITY	FINISHES	LAB - CASEWORK	LAB - FUME HOODS	MECHANICAL	PLUMBING	ELECTRICAL
2314A	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
2315	LAB - SUPPORT	3-Full Renovation	Y	3	3	-	-	3	3	3
2319	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
2330	LAB - INSTR	3-Full Renovation	N	3	3	-	-	3	3	3
2331	LAB - DRY 1 COMP	3-Full Renovation	N	3	3	3	3	3	3	3
2334	LAB - FLEX 2	3-Full Renovation	N	3	3	3	3	3	3	3
2343	LAB - DRY 1 COMP	3-Full Renovation	N	3	3	-	-	3	3	3
2350	LAB - WET 1	3-Full Renovation	N	3	3	3	3	3	3	3
2352	LAB - SUPPORT	3-Full Renovation	N	3	3	3	3	3	3	3
2353	LAB - DRY 1 COMP	3-Full Renovation	Y	3	3	3	-	3	3	3
2357	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
2360	LAB - SUPPORT	3-Full Renovation	N	3	3	-	-	3	3	3
2361	LAB - WET 2	3-Full Renovation	Y	3	3	3	3	3	3	3
2364	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
2367	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	3	3	3	3
2368	LAB - SUPPORT	3-Full Renovation	N	3	3	3	-	3	3	3
2371	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	3	3	3	3
2371A	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
2378	LAB - DRY 1 COMP	3-Full Renovation	N	3	3	3	-	3	3	3
2416	LAB - DRY 1 COMP	3-Full Renovation	N	3	2	-	-	3	3	3
2423	LAB - DRY 1 COMP	3-Full Renovation	N	3	2	-	-	3	3	3
2424	LAB - DRY 1 COMP	3-Full Renovation	N	3	2	-	-	3	3	3
2429	LAB - DRY 1 COMP	3-Full Renovation	N	3	2	-	-	3	3	3
2429A	LAB - SUPPORT	3-Full Renovation	N	3	3	-	-	3	3	3
2429B	LAB - SUPPORT	3-Full Renovation	N	3	3	-	-	3	3	3
2432	LAB - DRY 1 COMP	3-Full Renovation	N	3	2	-	-	3	3	3
2438	LAB - DRY 1 COMP	3-Full Renovation	N	3	2	-	-	3	3	3
2443	LAB - SUPPORT	3-Full Renovation	N	3	3	-	-	3	3	3
2443A	LAB - SUPPORT	3-Full Renovation	N	3	3	-	-	3	3	3
2443B	LAB - SUPPORT	3-Full Renovation	N	3	3	-	-	3	3	3
2447	LAB - SUPPORT	3-Full Renovation	N	3	3	-	-	3	3	3
CR2400	CORRIDOR	3-Full Renovation	-	3	3	-	-	3	3	3

SECOND FLOOR

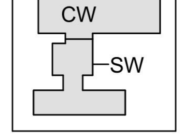
EXISTING CONDITIONS MATRIX (CONT.)

ROOM ID	ROOM TYPE	OVERALL	MEETS PROGRAM NEEDS	ACCESSIBILITY	FINISHES	LAB - CASEWORK	LAB - FUME HOODS	MECHANICAL	PLUMBING	ELECTRICAL
3301/3309	LAB - WET 3	2-Moderate Renovation	Y	3	2	2	1	3	3	3
3306	LAB - DRY 1 COMP	2-Moderate Renovation	Y	3	3	3	2	3	3	3
3310	LAB - SUPPORT	2-Moderate Renovation	Y	3	3	3	2	3	3	3
3310A	LAB - SUPPORT	2-Moderate Renovation	Y	3	3	3	-	3	3	3
3316	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
3317	LAB - WET 2	3-Full Renovation	Y	3	3	3	3	3	3	3
3317A	LAB - WET 2	3-Full Renovation	Y	3	3	3	1	3	3	3
3326	LAB - WET 2	3-Full Renovation	Y	3	3	3	3	3	3	3
3326A	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	3	3	3	3
3331	LAB - INSTR	3-Full Renovation	N	3	2	-	-	3	3	2
3341	LAB - WET 3	3-Full Renovation	Y	3	3	3	3	3	3	3
3341A	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	3	3	3	3
3344	LAB - WET 3	3-Full Renovation	Y	3	3	3	3	3	3	3
3344A	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
3357	LAB - WET 2	3-Full Renovation	Y	3	3	3	3	3	3	3
3360	LAB - WET 3	3-Full Renovation	N	3	1	1	1	3	3	3
3367	LAB - WET 2	2-Moderate Renovation	Y	3	1	1	1	3	3	3
3367A	LAB - SUPPORT	2-Moderate Renovation	Y	3	1	1	1	3	3	3
3372	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	3	3	-	3
3374	LAB - INSTR	3-Full Renovation	N	3	3	3	3	3	3	3
3418	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	-	3	3	3
3419	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	3	3	3	2
3419A	LAB - SUPPORT	3-Full Renovation	Y	3	3	3	3	3	3	3
3424	LAB - WET 1	3-Full Renovation	Y	3	3	3	3	3	3	3
3424A	LAB - DRY 1 COMP	3-Full Renovation	Y	3	3	3	3	3	3	3
3424B	LAB - DRY 1 COMP	3-Full Renovation	Y	3	3	3	3	3	3	3
3425	LAB - WET 3	2-Moderate Renovation	Y	3	2	2	1	3	3	3
3428	OFFICE - SHARED	3-Full Renovation	Y	3	3	3	3	3	3	3
3432	OFFICE - SHARED	3-Full Renovation	Y	3	3	3	3	3	3	3
3436	OFFICE - SHARED	3-Full Renovation	Y	3	3	3	3	3	3	3
3442	LAB - DRY 1 COMP	3-Full Renovation	Y	3	3	3	3	3	3	3
3442A	LAB - DRY 1 COMP	3-Full Renovation	Y	3	3	3	3	3	3	3
3443	LAB - WET 3	3-Full Renovation	Y	3	3	3	2	3	3	3
3443A	LAB - WET 2	3-Full Renovation	Y	3	3	3	1	3	3	3
CR3300B	CORRIDOR	3-Full Renovation	-	3	3	-	-	3	3	3

THIRD FLOOR

4.6 EXISTING CONDITIONS - FLOOR PLANS

FIRST FLOOR



SECOND FLOOR


ASSESSMENT
1- BASELINE
2- MODERATE
3- FULL
ROOM TYPES
LAB
LAB SUPPORT
OFFICE
OFFICE SUPPORT
OFFICE SHARED
CIRCULATION
BUILDING SUPPORT
PUBLIC
STATUS
VACANT ROOM
OCCUPIED ROOM
UNRELATED PROGRAM
FUMEHOOD - GOOD
FUMEHOOD - POOR
EQUIPMENT
FUME HOODS
BIO-SAFETY CAB
KEY PLAN
NW
CW
SW

THIRD FLOOR

5.0

CIVIL ANALYSIS

INTRODUCTION
EXISTING CONDITIONS
GRADING AND DRAINAGE
STORMWATER TREATMENT
SITE UTILITIES
CONCLUSION

5.1 INTRODUCTION

This report documents site observations and underground utilities conditions around the perimeter of the Pierce Hall building and the north end loading dock, where the new proposed classroom is anticipated to be constructed. Observations, assessment and recommendations for upgrades are defined in this report.

In order to optimize site performance, this report includes sustainable practices for the proposed site systems and infrastructure upgrades.

5.2 EXISTING CONDITIONS

The survey dated March 2016 by Hill-Goodrow, Inc reflects there is an existing loading dock and asphalt parking lot directly north of the existing Pierce Hall Building.

There is an existing site retaining wall north of the access drive that borders the site to the north and landscaped areas bound the site on the east and west. The east side landscape bank indicates grades which climb several feet higher than the existing parking lot and loading dock. On the east portion of the loading dock there is also an existing above grade liquid nitrogen tank and concrete enclosure. The CMU/concrete storage structure on the northwest portion of the existing parking lot will be demolished to accommodate the new classroom building addition.

Existing grading and drainage around the east, west and south perimeters of Pierce Hall will remain in place. Civil scope in these areas will be limited to the anticipated waterproofing of below grade building walls and utility connections.

5.3 GRADING AND DRAINAGE

Based on the elevation on the survey the north end of the building is in a sump condition. There is a catch basin in the middle of the loading dock parking lot which collects stormwater. The northern doors of Pierce Hall are lower than the adjacent grades at the northwest entry drive and the east landscape bank could create a potential flood condition in heavy rain events. The connecting finish floor of the proposed classroom will be raised to alleviate flood risk.

The site retaining wall to the north will be demolished to create a wider pedestrian access aisle north of the Pierce Hall loading dock. The wall will be replaced with a sloping landscaped berm, which will act as a screen from the loading dock.

5.4 STORMWATER TREATMENT

Stormwater treatment will be required as part of the project to meet local and sustainability requirements. An underground infiltration drywell under the parking lot may be used to treat the water quality storm volume. Further investigation will be required to determine if infiltration will be allowed based on geotechnical constraints and whether new storm drain infrastructure will be required to mitigate the loading area being in a potential sump condition. Based on the geotechnical report dated July 8, 2016 no percolation testing was performed; this test is required to determine if the site soils will allow percolation of stormwater underground for treatment.

5.5 SITE UTILITIES

An existing sewer line is located west of existing Pierce Hall. From reviewing record drawings it is unclear where the sewer line exits the building and connects to the sewer line or the size and material of the line.

There are electrical and telecom lines running east-west under the access drive to the north of the building.

The survey identifies an underground tunnel that connects Bourns Hall to the southeast wall of Pierce Hall. We understand the tunnel contains mechanical utilities which are not shown on the survey. There are no gas lines identified on the survey which may be an indication that the gas line is located within tunnel.

The project will provide a new fire sprinkler system as part of the scope of work. Campus water pressure and/or hydrant flow testing will be required to determine the available pressure for site fire water design. Further survey information is required to determine whether there are existing fire hydrants around the building.

Recommendations:

- Develop a site survey that shows locations of all sewer and storm drain structures with inverts coming in/out of these structures, pipe sizes and materials. Show water lines coming in/out of the irrigation control valve boxes along with locations of all valves and pipe sizes.
- Study site elevations to determine if the connecting finish floor of the proposed classroom elevation is required to be raised to alleviate flood risk.
- Perform a percolation test to determine if the site soils will allow percolation of stormwater underground for treatment.
- Review the loading dock configuration with the Campus Fire Marshal for reduction of fire truck back up space.
- Develop a stormwater treatment plan that will meet local and sustainability requirements.
- An underground infiltration drywell under the parking lot could be used to treat the water quality storm volume.

5.6 CONCLUSION

The demolition of the existing site retaining wall and addition of the landscaped berm may create the need to relocate electrical and telecom lines.

Adjacent to the existing north building wall there are several irrigation control valves and electrical lines, which appear to be under the footprint of the new classroom area. If conflict exists, relocation of these lines will be required.

Water and storm drain lines appear to be under the footprint of the new classroom area. All utilities within this proposed building footprint will be relocated as part of the project.

Additional utility survey information is required to design the storm drain, water and sewer systems.

6.0

STRUCTURAL ANALYSIS

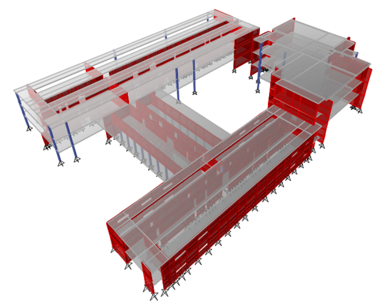
INTRODUCTION
EXISTING STRUCTURAL SYSTEMS
REQUIREMENTS & APPROACH
NEW CLASSROOM BUILDING

6.1 INTRODUCTION

The objective of this report is to document and analyze the structural components of the renovation of the Pierce Hall complex at the University of California, Riverside campus in Riverside, California.

The complex consists of two structures built in 1965 and 1966, and an addition built in 2000. During the 2000 addition project the existing 1965 and 1966 structures were seismically upgraded.

The Pierce Hall complex was evaluated to the UC seismic performance rating system in 2015. The methodology of ASCE 41 was used in the evaluation. Linear dynamic analyses were performed using three-dimensional models of the structures. Based on the analysis, it was determined that the buildings in their current state meet the requirements for UC Level III rating without additional structural upgrade work.



Plot of ETABS Model from 2015 Seismic Evaluation

Structural scope consists of maintaining the existing seismic and gravity systems and re-establishing structural support or capacity where they are impacted by the proposed infrastructure renovations.

Proposed renovation work that is anticipated to impact the existing structural systems include: new disabled access compliance door openings, infill of existing MEP openings, addition of new MEP openings, and addition of new MEP equipment/fume hoods.

6.2 EXISTING STRUCTURAL SYSTEMS

Building Seismic Separations

The existing 3-story central wing and 2-story south wing are seismically connected. The north wing addition is separated from the central wing by a 1 ½ ” isolation joint. The rest of this report details the structural systems and renovation requirements for the two structures.

Gravity Load Carrying System

The gravity framing system of the structures typically consists of reinforced 2-way concrete flat slabs for the floors and roof. The concrete slabs are supported on reinforced concrete columns and load bearing concrete and concrete masonry unit (CMU) walls. The concrete columns and walls are continuous to the foundation system.

Lateral Load Resisting System

The seismic system of the structures typically consists of the following:

- Concrete slab floors and roof act as structural diaphragms that transfer seismic forces to reinforced concrete and masonry shear walls.

- Reinforced concrete shear walls are the primary lateral resisting elements, with a limited number of CMU walls primarily in the south wing.
- Continuous strip footings below the walls transfer lateral loads to the surrounding soil.

Foundation System

The foundation system consists of conventional spread footings under the columns and continuous footings under the shearwalls.

6.3 REQUIREMENTS & APPROACH

1. New ADA Door Openings

Where existing lab door openings do not comply with current disabled access requirements, the openings are required to be enlarged. This will consist of saw-cutting the existing walls at the (E) door openings to enlarge them to 36” plus an overcut on each side and top of 4”. The overcut region will then be poured back with a new concrete jamb and header, with reinforcing drilled and epoxied into the (E) wall that remains beyond. Where the enlarged door opening requires cuts through existing reinforcing at the floor, the exposed reinforcing will be chipped back 1” and grout should be placed back over cut rebar to re-establish proper cover and provide a smooth walking surface.

2. Infill at Existing MEP Wall Openings

New concrete infill will be applied to the existing MEP wall openings that will no longer be used by new systems. The infill will consist of new 4 ksi concrete with #4 @ 10” O.C. E.W. across the infill with new bars drilled and epoxied into (E) wall beyond, as depicted to the right.

3. New Large MEP Wall Openings (20” or greater)

The size and location of new large MEP wall openings will be reviewed during design phase to confirm they do not negatively impact the wall structural capacity, either locally at the opening or globally across the building. The assumption at this stage is that the new opening quantity will be less than 5% of the length of any one wall, and therefore new wall reinforcing will not be required. Large openings will typically need to be overcut with new concrete jamb and header poured back similar to (*1.*) above.

4. New Medium MEP Wall Openings (10”-20”)

The size and location of new medium wall openings will be reviewed during the design phase to confirm they do not in combination excessively impact the wall structural capacity. No overcutting or pour-back will typically be required at these openings, and they may be saw-cut at the desired size. Cut reinforcing bars on the wall face to be chipped back 1" and have the bar ends grouted over to re-establish concrete cover. X-ray/pachometer would be required to be used to locate reinforcing at the proposed opening location and to cut 1 line of bars max. in each direction.

5. New Small MEP Wall Openings (10" or less)

Openings of this size that do not damage (E) reinforcing and are sufficiently spaced apart do not typically impact the structural system. X-ray/ pachometer would be required to be used to locate opening and avoid (E) reinforcing. No pour-back or bar chip out required where openings do not conflict with reinforcing.

6. New MEP Slab Openings

New slab openings for MEP runs are feasible, with the preferred location being between (E) concrete beams so that only the short-span slab is impacted. The opening layout will be reviewed and coordinated during design to avoid (E) beams. At select locations where (E) beams are impacted, heading out the cut beams and reinforcing the adjacent beams with steel plates or FRP would be feasible.

At slabs, openings may typically be saw-cut at desired size (no overcut and pour-back) with cut reinforcing bars to be chipped back 1" and have bar ends grouted over.

7. New MEP Equipment

New MEP equipment supports to be located so that anchors occur into (E) concrete beams. Typically the (E) slab is not adequate to support large equipment bearing pads or anchors. Allow for some reinforcing of beams at heavy equipment locations (>2,000 lbs) with steel channels through-bolted or expansion anchored to each side of beam. Alternatively, FRP reinforcing of beams may be feasible, with reinforcing options to be explored during design.

8. New Fume Hoods

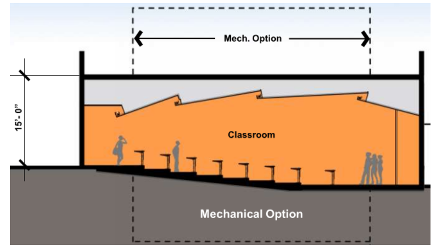
New fume hoods should be anchored directly to (E) concrete beams above or to secondary steel channels that frame into (E) concrete beams. Typically the (E) slab is not adequate to support new large hanger loads. Allow for some reinforcing of beams at fume hood locations with steel channels or FRP, similar to (7) above.

6.4 NEW CLASSROOM BUILDING

The New Classroom will consist of a new stand-alone, structurally independent building to the North of the existing Pierce Hall Complex. Below, two structural options are detailed, with the preferred approach being dependent on the approach to the façade, MEP equipment, and massing that remain to be developed during the design phase.

Option 1 - 1-Story Classroom Building

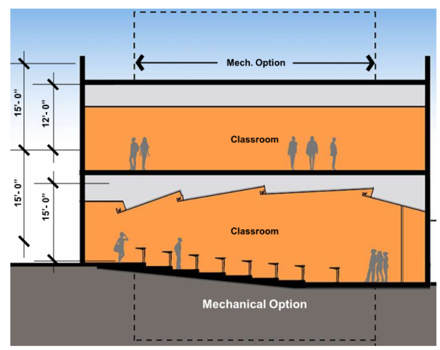
- Long-span steel WF roof beams with no interior columns supporting a metal deck and concrete fill roof with MEP equipment on concrete pads above.
- Minimum roof concrete thickness likely governed by acoustic requirements. Structurally, 4 ½” NW conc. fill over a 3” metal deck (7 ½” total depth) is the recommended assembly.
- Vertical supports and lateral system at building perimeter consisting of either steel HSS columns with HSS diagonal braces (2 per side) or CMU bearing/shear walls.
- Ground level consists of a 5” slab on grade sloped and stepped to form the classroom seating.
- Foundations are likely continuous spread footings at building perimeter, pending geotechnical report information.
- Seismic joint between new classroom building and existing Pierce Hall of about 6” would be required.



1-Story Classroom Schematic

Option 2 - 2-Story Classroom Building

- Long-span steel WF second floor and roof framing with no interior columns supporting metal deck and concrete fill floor and roof slabs.
- MEP equipment on concrete pads above the roof, with roof slab thickness likely governed by acoustic requirements. Structurally, 4 ½” NW conc. fill over a 3” metal deck (7½” total depth) is the recommended assembly.
- Vertical and lateral framing at building perimeter consisting of steel HSS or WF columns with HSS diagonal braces (2 per side, stacked).
- Ground level consists of a 5” slab on grade sloped and stepped to form the classroom seating.
- Foundations are likely continuous spread footings at building perimeter, pending geotechnical report information.
- Stair and elevators to be framed out with steel. Assume vertical HSS guiderail supports required at elevator due to the high floor to floor.
- Seismic joint between new classroom building and existing Pierce Hall of about 10” would be required.



2-Story Classroom Schematic

7.0

MECHANICAL ANALYSIS

INTRODUCTION
EXISTING SYSTEMS ASSESMENT & RECOMMENDATIONS
SUSTAINABLE FEATURES

7.1 INTRODUCTION

This report documents mechanical utilities observations, system assessments and proposed recommendations to upgrade the existing infrastructure of the Pierce Hall Building. The assessment represents the engineer's best effort to identify and document deficiencies.

In order to optimize building performance and operational efficiencies, this report includes sustainable practices for the building mechanical systems infrastructure upgrades.

Methodology:

The mechanical engineers first performed a general observation of the building with a follow-up observation of the air handler internal components. These site observations included UCR representatives.

Reference documents used in this review include Record Drawings of the center and south wing; additional record drawings for the north wing addition and the renovation rework done in the year 2000 of the entire building air distribution and laboratory fume hood exhaust system were not available. The design team arrived at their conclusions stated in this report based on observations made during the walk-through.

Systems' Classifications:

The equipment condition terminology used throughout this report classifies the equipment as follows:

- Good: Equipment is in top working condition. Category applies to new equipment that has recently been installed.
- Fair: Equipment is in moderate working condition. Category applies to equipment that has been in service for some time, having an acceptable performance level, but approaching the end of its useful service life expectancy. Equipment under this category is recommended to be replaced the next time it fails or requires major repair work.
- Poor: Equipment is in an undesirable working condition. Category applies to equipment with a high potential of failure, past its useful service life, and in need of replacement. Equipment under this category is recommended to be replaced.

Applicable Codes:

The following applicable codes were used in this review:

- California Building Code (CBC), 2013 Edition
- California Mechanical Code (CMC), 2013 Edition
- California Electrical Code (CEC), 2013 Edition
- California Plumbing Code (CPC), 2013 Edition
- California Energy Code (Title 24), 2013 Edition
- UC Sustainable Practice Policy

7.2 EXISTING SYSTEMS ASSESSMENT AND RECOMMENDATIONS

7.2.1 General

The existing HVAC equipment in the basement is the originally installed equipment from the mid-sixties. Based on its current age of 50 years, and from its physical appearance, the equipment is at the end of its useful service life and cannot reasonably be expected to remain reliable for any significant period of time.

The focus of the year 2000 renovation was to renovate the building air distribution and exhaust system including the laboratory fume hood system, and did not address the existing MEP equipment.

Refer to Appendix D – Mechanical Deficiency Tabulations of this report, for an itemized evaluation of the mechanical equipment and specific information on its condition.

7.2.2 Air Handlers

The building is being served by a field fabricated built-up Fan Stations S-1, S-2 and S3.

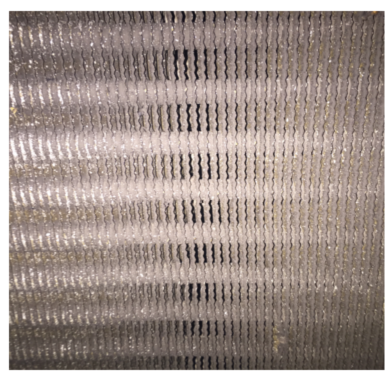
Fan station exhibits significant corrosion.

- **Fan Station S-1 is** located at the basement level in the Mechanical Equipment Room and serves the first and second floors of the south Wing. Fan Station S-1 operates on constant volume, single duct with partial outside air combined with return air to provide supply air into the spaces. It was originally installed around 1966 as a dual duct system (cold and hot deck) and converted in the year 200 into two cold ducts with terminal reheat for zone temperature control.

  The fan station galvanized steel casing panels, filter bank, fan, motor pulley drive, vibration mounts and structural steel base are in poor condition and exhibit significant corrosion.

  Cooling coils including their casings and drain pans are poor condition.

  The heating coils were decommissioned when the unit was converted into two cold duct systems.



Cooling and heating coils is in poor condition.

- **Fan Station S-2** is located in the basement level Mechanical Equipment Room and serves the first, second and third Floors of the center wing. Fan Station S-2 operates on 100% outside air with a single duct to provide supply air into the spaces. Fan S-2 was originally installed around 1966 as a dual duct system (cold and hot deck) and converted in the year 2000 into two cold ducts with terminal reheat for zone temperature control.

The fan station galvanized steel casing panels, filter bank, fan, motor pulley drive, vibration mounts and structural steel base are in poor condition and exhibit significant corrosion.

Cooling coils including their casings and drain pans are in poor condition.

Heating coils were decommissioned when the unit was converted into two cold duct systems.

- **Fan Station S-3 is** located at the basement level Mechanical Equipment Room and serves the first, second and third floors of the north wing. Fan Station S-3 operates on 100% outside air, single duct to provide supply air into the spaces. Fan S-3 was originally installed around 1966 as a dual duct system (cold and hot deck) and converted in the year 2000 into two cold ducts with terminal reheat for zone temperature control.

  The fan station galvanized steel casing panels, filter bank, fan, motor pulley drive, vibration mounts and structural steel base are in poor condition and exhibit significant corrosion.

  Cooling coils including their casings and drain pans are in poor condition.

  Heating coils were decommissioned when the unit was converted into two cold duct systems.

Fan station's vibration mounts and structural base exhibits significant corrosion.

Recommendations:

- Demolish existing and provide new built-up Variable Air Volume (VAV) Air Handlers, S-1, S-2 and S-3, including cooling coils, stainless steel drain pans, preheating coils, galvanized steel casing panels, filter banks, fan wall, motors, vibration mounts, associated cooling and heating coils piping hook-ups, dampers, etc.
- Demolish a portion of existing main downstream and upstream ductwork where corrosion is evident and provide new ductwork complete with sound traps.
- Existing ductwork to remain must be cleaned by a qualified contractor specializing in HVAC systems cleaning.

7.2.3 Chilled Water and Heating Hot Water

Chilled water and heating hot water provide cooling and heating for the building. Chilled water and heating hot water piping mains are routed thru the basement utility tunnel and are in fair condition. The existing chilled water piping connections to Fan Stations S-1, S-2 and S-3 cooling coils including its valves, are in poor condition. When the heating coils in the air handlers were decommissioned, heating hot water connections to these heating coils were disconnected from the heating hot water piping system.

- **Chilled Water Secondary Pumps P-1, P-2, P-5 and P-6:** Chilled water to Fan Station S-1 and S-2 are fed from the campus distribution system through secondary pumps P-1 and P-2. The pumps including its valves are in poor condition. Chilled water to Fan Station S-3 is through secondary pumps P-5 and P-6. The pumps including their valves are in poor condition.
- **Heating Hot Water Recirculating Pumps P-3, P-4, P-7 and P-8:** Heating hot water to Fan Station S-1 and S-2 are fed from the main heating hot water loop through heating hot water recirculating pumps P-3 and P-4. The pumps including their valves are in poor condition.
- **Hot Water Tank T-1** serving the heating hot water system is in poor condition. Heating hot water to Fan Station S-3 is through heating hot water recirculating pumps P-7 and P-8. The pumps including its valves generally are in poor condition.

Chilled water pumps exhibit significant leakage of chilled water

Recommendations:

- Demolish existing and provide new (4) chilled water secondary pumps with associated valves, expansion tanks and air separator tanks serving Air Handlers S-1, S-2 and S-3.
- Integrate Variable Speed Drive (VSD) with the new pumps to provide variable chilled water flow into the system.
- Demolish existing and provide new (4) heating hot water recirculating pumps with associated valves, expansion tanks and air separator tanks serving Air Handlers S-1, S-2 and S-3 to ascertain their actual condition.
- Integrate Variable Speed Drive (VSD) with the new pumps to provide variable heating hot water flow into the system.
- Test chilled water piping and heating hot water piping to confirm their actual condition.

Heating hot water pumps generally are in poor condition

7.2.4 Air Distribution

Existing air distribution throughout the building is by means of a single duct zone terminal reheat coils with heating hot water installed downstream of existing supply mixed air flow static pressure dampers. These static pressure dampers were decommissioned and set at fixed conditions to provide constant volume when the originally installed double duct (cold & hot air) supply air distribution system was converted into dual cold duct. Zone terminal reheat coils are provided to maintain laboratory and office spaces and generally are in fair condition.
In the south wing offices, the ceiling spaces are utilized as a return air plenum with non-ducted return back to Fan Station S-1 via protected shaft openings at each floor. In the south wing laboratories, supply air is exhausted through general exhaust and fume hood exhaust system.

Terminal reheat coils are in fair condition

In the center and north wing laboratories, supply air is exhausted through general exhaust and fume hood exhaust system.

Recommendations:

- Demolish existing supply mixed air flow static pressure dampers and provide new VAV air terminal units for optimum zone air distribution control throughout the building.
- Test existing zone terminal reheat coils to ascertain their actual condition and proper operation.
- Demolish existing ductwork to accommodate new space use, and existing ductwork to remain must be cleaned by a qualified contractor specializing in HVAC systems cleaning.
- Provide new supply air outlets and exhaust ceiling grilles to accommodate proposed new program use.

7.2.5 General and Restroom Exhaust System

- **Exhaust Fan EF-1** is a roof-mounted constant volume exhaust fan serving the central wing; it is in fair condition.
- **Exhaust Fan EF-2 and EF no Tag** are roof-mounted constant volume HEPA bag-in / bag out exhaust fans serving the center wing and are in fair condition.
- **Exhaust Fan EF-3** is a roof-mounted constant volume exhaust fan serving the north wing and is in fair condition.
- **Exhaust Fan N-14, N-15 and 3424** are roof-mounted constant volume exhaust fans serving the north wing and are in poor condition.
- **Exhaust Fan - No Tag -** is a roof-mounted constant volume exhaust fan serving the south wing and is in fair condition.
- **Exhaust Fan E-22** is a utility constant volume exhaust fan serving the basement tunnel and is in poor condition.
- **Ventilation Fan V-1** is a cabinet constant volume ventilation fan serving the Basement Electrical Room 301 and is in poor condition.
- **Ventilation Fan V-2** is a utility constant volume ventilation fan serving the Basement Electrical Room 304 and is in poor condition.

Roof-mounted building exhaust fan is in poor condition

Exhaust fan damper serving the tunnel exhibits significant corrosion

Recommendations:

- Demolish the following existing fans and provide new Variable Air Volume (VAV) exhaust fans:
  - Roof-mounted general Exhaust Fans N-14, N-15 and 3424 serving the north wing.
  - Ducted utility Exhaust Fan E-22 serving the basement tunnel.
  - Ducted cabinet type Ventilation Fan V-1 serving the Basement Electrical Room 301.
  - Ducted utility ventilation Fan V-2 serving the basement Electrical Room 304.
- Test the following existing fans to ascertain their actual condition and proper operation. Integrate Variable Speed Drive (VSD) to operate the fans into Variable Air Volume (VAV) system:
  - General Exhaust Fan (EF-1) serving the Central Area.
  - Roof-mounted high stack specialty Fans (EF-2) and (EF-No Tag) with HEPA bag-in/bag-out filters serving the Central Area.
  - Roof mounted Exhaust Fan (EF-3) serving the North Wing.

7.2.6 Laboratory Exhaust System

- **Fume Hood and Laboratory General Exhaust Fans EF-4, EF-5, EF-6 and EF-7** with high fume stack were installed with stainless steel ductwork manifold on the roof and serve all the center wing laboratory room and fume hood exhaust systems, and are in fair condition.
- **Fume Hood and Laboratory General Exhaust Fans EF-8 and EF-9** with high fume stack were installed with a stainless steel ductwork manifold on the roof and serve all the north wing laboratory room and fume hood exhaust systems, and are in fair condition.
- **Fume Hood and Laboratory General Exhaust Fans EF-10 and EF-11** with high fume stack were installed with a stainless steel ductwork manifold on the roof and serve all the South Wing laboratory room and fume hood exhaust systems, and are in fair condition. The fume hood system does not have integrated phoenix control valves and are running on constant volume. All fume hood stainless ductwork risers from laboratories are in dedicated shafts; stainless steel exhaust fume ductwork is observed to be in fair condition. Typically this ductwork is welded and testing is not required.

Roof-mounted fume hood exhaust fan and stainless steel manifold are in fair condition

Recommendations:

- Prior to Schematic Design Phase, test existing fume hood Exhaust Fans EF-4, EF-5, EF-6, EF-7 EF-8, EF-9, EF-10 and EF-11 to ascertain their actual condition and proper operation.
- Provide phoenix exhaust and supply valves, and integrate Variable Speed Drive (VSD) to operate the fans into Variable Air Volume (VAV) system.

7.2.7 Chilled Industrial Water System

Chilled industrial water is provided for the building laboratories and Pierce Hall Annex through a chilled industrial water heat exchanger located in the basement. Chilled water is fed from the campus chilled water distribution system. The heat exchanger is in poor condition.

Chilled industrial water heat exchanger is in poor condition.

Another chilled industrial water loop is provided on the south wing roof, which is in poor condition and has been abandoned. The loop consist of (3) chillers, (2) chilled water pumps, expansion tank, air separator, valves and piping.

Abandoned air cooled chiller to be demolished previously serving chilled industrial water system.

Recommendations:

- Demolish existing chilled industrial water system, equipment, piping, valves, etc., located on the roof of the south wing. The system is redundant and has been abandoned.
- Demolish existing and provide new chilled industrial water equipment located in the North Wing Basement – (1) heat exchanger, (2) associated recirculating pumps, (1) expansion tanks, (1) air separators, valves, etc.

7.2.8 Steam System

Campus fed High Pressure Steam (HPS 95 psi) steam provides heating to generate medium and low pressure steam for laboratories, still, heating hot water and domestic hot water for the building. High pressure steam is fed to (5) Pressure Reducing Valves **PRV-1, PRV-2, PRV-3, PRV-4 and PRV-5** station. The PRV stations are in poor condition.

- **PRV-1** provides 15 psi steam to laboratory tables.
- **PRV-2 & 3** provides 5 psi steam to heating hot water heat exchanger.
- **PRV-4** provides medium pressure to Still.
- **PRV-5** provides 5 psi steam to domestic hot water heat exchanger.
- **Heating Hot Water Heat Exchanger HE-1** is fed with low pressure steam from (PRV-2 and PRV-3) to generate heating hot water.
- Auxiliary steam equipment **Condensate Return Unit CR-1, Flash Tank T-3, Condensate Flow Meter** and **Steam Flow Trap** are in poor condition.

Recommendations:

- Demolish existing and provide new Pressure Reducing Valve Stations PRV-1, PRV-2, PRV-3, PRV-4 and PRV-5 with associated valves, fittings, condensate return unit CR-1, flash tank T-3, condensate flow meter and steam flow traps.
- Test existing heating hot water heat exchanger HE-1 to ascertain its actual condition and proper operation.
- Test existing high pressure and low pressure steam piping to ascertain their actual condition.

7.2.9 Cold Room Equipment

Multiple indoor and outdoor condensing units serving the cold rooms in the building are in poor condition. Depending on whether the Cold Rooms are required by program the design team offers the following recommendations.

Recommendations:

- Demolish existing outdoor units and indoor units if not required by new space program.
- Test remaining existing outdoor units and indoor units if required to be used for the new program space to ascertain their actual conditions and confirm proper operation.

PRV station are in poor condition and exhibit major corrosion

Condensate meter exhibits major corrosion.

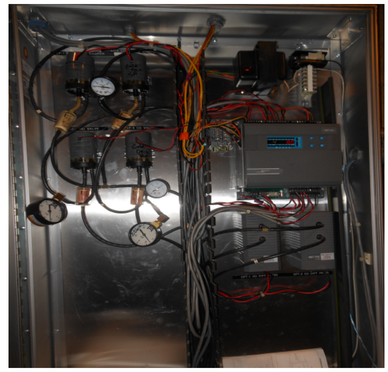
Condensing units serving cold rooms are in poor condition.

7.2.10 HVAC Control System

The existing HVAC Control systems are in fair condition. The existing HVAC control system is a combination of Direct Digital Control (DDC) and pneumatic control system.

Recommendations:

- Demolish existing remaining pneumatic controls including control Air Tank T-2.
- Upgrade existing HVAC DDC controls and monitoring by providing full DDC control system for optimization of building automation controls. Included in the new HVAC control system is an HVAC control and monitoring from the Campus Central Control Station.

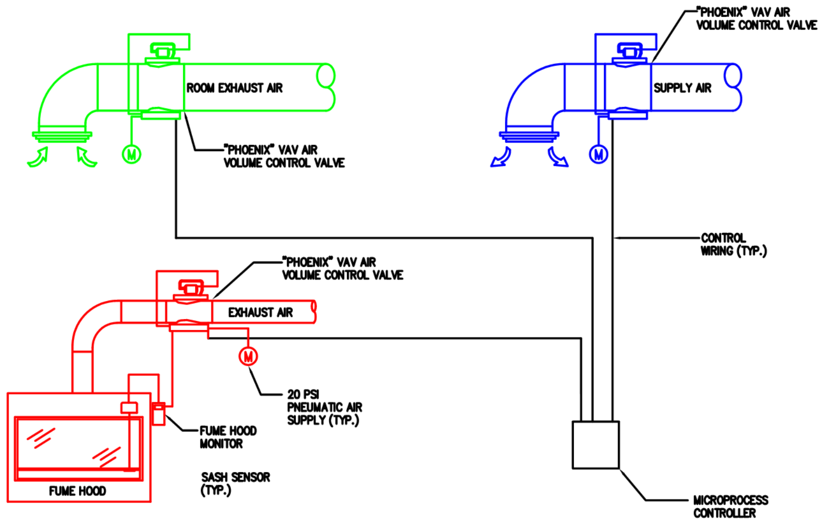


HVAC pneumatic controls are in fair condition

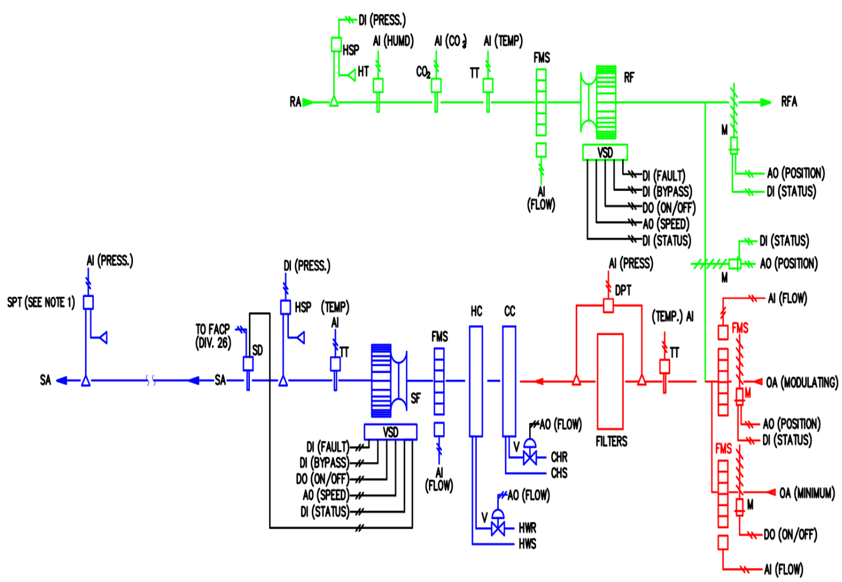
7.3 SUSTAINABLE FEATURES

In an effort to reduce energy consumption and conserve natural resources, part of the renewal project shall consider Sustainable Design Features into the mechanical system to the extent feasible. Some of the anticipated features are as follows:

- Variable Air Volume (VAV) supply air and building exhaust system.



Proposed Variable Air Volume (VAV) supply air, building exhaust and fume hood exhaust system for sustainability



Proposed Variable Air Volume (VAV) air handling unit provided with full HVAC DDC control system for sustainability

- High performance air filtration (MERV 13 or better).
- Integration of supply air temperature reset into the HVAC system.
- Integration of new Variable Air Volume (VAV) system for the existing fume hood Exhaust Fans EF-4, EF-5, EF-6, EF-7, EF-8, EF-9, EF-10 and EF-11.
- Variable flow chilled water and heating hot water systems.
- Full Direct Digital Control (DDC) for system optimization.
- Premium efficiency motors for motors larger than 1 HP to all new HVAC equipment.
- Occupancy setback capability.

Special design consideration will be addressed during the remodel design works as follows:

- Dedicated Variable Air Volume (VAV) boxes will be provided for corner spaces, and up to no more than 4 perimeter spaces with the same exposure.
- Interior VAV boxes not to exceed a floor coverage of approximately 1,800 square feet.
- VAV boxes size not to exceed 2,000 CFM to control noise.
- Acoustic and vibration controls.
- Control of electrical line “noise” from equipment.
- Vibration controls of suspended equipment.
- Service access for the remodel work of all mechanical equipment.
- Full integration of a HVAC control system into the Campus Building Management System (BMS).
- Addition of CO2 sensors for indoor air quality monitoring for spaces of high occupant density.
- Control of static pressure within building reference to outside.
- Outside air intake at air handling units to be measured via air flow measuring station.
- Create a high level of indoor air quality by providing a high level of filtration efficiency.
- Provide concrete curb for all new mechanical equipment.
- Provide seismic bracings to existing ductwork.

Provide testing, adjusting and balancing of the entire building once the HVAC renovations have been completed, including the air and hydronic water of the HVAC system.

8.0

PLUMBING ANALYSIS

8.1 INTRODUCTION

This report documents plumbing systems observations, assessment and proposed recommendations to upgrade the existing infrastructure at the Pierce Hall Building. The assessment represents the engineer's best effort to identify and document deficiencies.

In order to optimize building performance and operating efficiencies, this report includes sustainable practices for the proposed building plumbing systems and infrastructure upgrades.

Methodology:

The plumbing engineers first performed a general observation of the building with a follow-up visit to review the individual components. These observations included UCR representatives.

Reference documents used in this review include the 1964 Record Drawings of the center and south wings. Additional record drawings were not available for the 1965-1966 Mechanical and Plumbing record drawings of the North Wing Addition.

Systems' Classifications:

The equipment condition terminology used throughout this report classifies the equipment as follows:

- Good: Equipment is in top working condition. Category applies to new equipment that has recently been installed.
- Fair: Equipment is in moderate working condition. Category applies to equipment that has been in service for some time, having an acceptable performance level, but approaching the end of its useful service life expectancy. Equipment under this category is recommended to be replaced the next time it fails or requires major repair work.
- Poor: Equipment is in an undesirable working condition. Category applies to equipment with a high potential of failure, past its useful service life, and in need of replacement. Equipment under this category is recommended to be replaced.

Applicable Codes:

The following applicable codes were used in this review:

- California Building Code (CBC), 2013 Edition
- California Electrical Code (CEC), 2013 Edition
- California Plumbing Code (CPC), 2013 Edition
- California Energy Code (Title 24), 2013 Edition
- UC Sustainable Practice Policy

8.2 EXISTING SYSTEMS ASSESSMENT AND RECOMMENDATIONS

8.2.1 General

The existing plumbing systems have the originally installed equipment from the mid-sixties. At their current age of 50 years, and from their physical appearance, the equipment is at the end of their useful service life and cannot reasonably be expected to remain reliable for another term of service.

Refer to Appendix E - Deficiency Tabulation Tabulations in this report, for an itemized evaluation of the plumbing equipment and specific information on its' condition.

Domestic hot water generator is in poor condition.

8.2.2 Domestic & Industrial Cold Water & Hot Water

The domestic Cold Water (CW) system enters the building south of the South Wing Basement Mechanical Equipment Room and runs through the tunnel, to the center north wing basement Mechanical Equipment Rooms.

The center, south, and north wings have their own dedicated cold water distribution system as follows:

- Domestic cold water goes through water meter, pressure regulating assembly, backflow preventer and is distributed as Industrial Cold Water (ICW) throughout the building to the plumbing fixtures. The Water Meter is in poor condition. The pressure regulating assembly and backflow preventer are in fair condition.
- Visible domestic cold water and industrial cold water is copper piping and is in fair condition.
- Domestic hot water (HW) is generated by a steam fed domestic Hot Water Generator (WH-1). The hot water generator is in poor condition.
- Domestic hot water is fed to the main domestic hot water recirculating loop through Hot Water Recirculating Pump P-1. The pump including its valves are in poor condition.

Hot water recirculating pumps are in poor condition.

Recommendations:

- Demolish existing and provide (2) new water meters and valves to serve center, south, and north wings.
- Test existing (2) pressure regulating assemblies, (2) backflow preventers, and domestic cold, industrial cold, and hot water piping to ascertain their actual conditions.

Sump pumps are in poor condition. Typical to all sump pumps

8.2.3 Soil & Waste Drainage System

The Soil and Waste (SW) piping system collects waste from the plumbing fixtures and leaves through the west side of the building basement via overhead piping. A separate system is serving the floor drains and floor sinks at the Basement floor collected through a sump pit. The south wing, center and north wing basement floor have dedicated sump pits. The 3 sump pits are in poor condition due to its age and had passed its useful service life. The sewer piping system is in fair condition.

Recommendations;

- Demolish existing and provide 3 new sump pits including pumps, valves, and related controls.
- Test existing soil and waste drainage piping to ascertain their actual condition.

8.2.4 Storm Water Drain System

The Storm Drain (SD) piping system drains water from the roof and area drains and leaves through the West side of the building Basement via overhead piping. The condition of the storm drain piping is in fair condition. All roof drains are in poor condition exhibiting significant corrosion due to their age.

Recommendations:

- Demolish existing and provide new roof drains.
- Test of existing storm water drain piping to ascertain its actual condition

Roof drains are in poor condition.

8.2.5 Natural Gas

Natural High Pressure Gas (HPG) piping enters the building at the basement level through a gas meter and 2 pressure regulators located in the center wing Mechanical Equipment Room. Natural gas (G) is distributed throughout the building to all laboratories requiring gas. The gas meter and laboratory fixture connections are in poor condition due to its age and had passed its useful service life. The 2 pressure regulators and gas piping are in fair condition.

Recommendations:

- Demolish existing and provide (2) new high pressure gas meters and valves to serve the center, south, and north wings.
- Test existing (2) gas pressure regulator and natural gas piping to ascertain their actual conditions.

Gas meter assembly is in poor condition.

8.2.6 Acid Resistant Waste System

The acid resistant waste (ARW) system collects acid waste from the laboratories and leaves through the west side of the building basement via overhead piping. It is in poor condition due to its age and had passed its useful service life. Occurrences of leakages on acid piping are visible.

Recommendations:

- Demolish existing and provide new acid resistant waste piping to serve the laboratories.

Acid waste resistant piping is in poor condition. There are visible leakages.

- Test existing acid waste clarifier/neutralizer to ascertain their actual condition, if existing – it was not seen during the site walk.

8.2.7 Laboratory Air & Vacuum

Laboratory air and vacuum is coming from the Basement floor in the Central Area where the Air Compressor AC-1 and Vacuum Pump VC-1 are located. The compressor and vacuum pumps are in poor condition due to its age and had passed its useful service life.

Compressed Air Tank AT-1, Vacuum Tank VT-1, compressed air piping and vacuum piping are in poor condition due to age.

Recommendation:

- Demolish existing and provide new air compressors and vacuum pumps, and their associated tanks, valves, air piping, and vacuum piping.

8.2.8 Plumbing Fixtures

The plumbing fixtures in both the restrooms and the laboratories are in poor condition.

Recommendation:

- Demolish existing and provide new sanitary, laboratory and drinking fountains with compliant fixtures.

8.2.9 Distilled Water System

The Distilled Water (DW) system and equipment located in the Still Room on the roof of the center wing appears to be abandoned and in poor condition.

Recommendations:

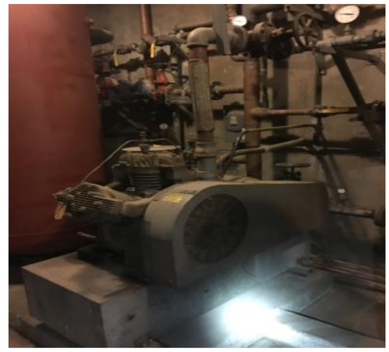
- Demolish existing and provide new distilled water system and associated equipment.

8.2.10 Fire Suppression

The Basement is fully sprinklered. The rest of the building does not have a fire protection system.

Recommendations:

- Test existing fire riser assembly to ascertain its actual condition and provide sprinkler system for the entire building



Air compressors are in poor condition.

Drinking fountain is not Code compliant

Abandoned distilled water tank

8.3 SUSTAINABLE FEATURES

In an effort to reduce energy consumption, optimize performance and operating efficiencies, conserve natural resources and meet UCR's Silver LEED requirements, the renewal project will implement sustainable design features into the plumbing systems. Anticipated features include:

Provide water conservation sanitary fixtures:

- Water closets to be equipped with battery operated sensor flush valve providing 1.28 GPF in lieu of 1.6 GPF.
- Metered lavatory faucets with battery operated sensor in public toilets. All lavs metered at 0.5 GPM at 12 seconds in lieu of 2.2 GPM.
- Break room sink faucet to provide 1.8 GPM in lieu of 2.2 GPM.
- Urinals equipped with battery operated sensor flush valve providing 0.5 GPF in lieu of 1.0 GPF.
- All janitor sinks will be equipped with manual faucet providing 1.8 GPM in lieu of 2.2 GPM.

Provide premium efficiency motors larger than 1 HP to all new plumbing equipment.

8.4 CONCLUSION

Most of the building's plumbing systems are old and in need of replacement. Although it may be possible to selectively salvage and reuse select portions of these systems, this would requires further testing which is beyond the scope of this study. Reuse can present challenges during construction as it relates to overall system performance, warranty and longevity.

9.0

ELECTRICAL ANALYSIS

INTRODUCTION
EXISTING SYSTEMS ASSESSMENT & RECOMMENDATIONS
LABORATORIES
CLASSROOM BUILDING
FIRE ALARM SYSTEM
LOW VOLTAGE SYSTEMS
A/V NEW CLASSROOM BLDG
WI-FI SYSTEM
CONCLUSION

9.1 INTRODUCTION

This report documents electrical systems observations, evaluation of each system and proposed recommendations to upgrade the existing infrastructure of the Pierce Hall Building. The assessment represents the engineer's best effort to identify and document deficiencies.

In an effort to optimize the future building performance and operating efficiencies, this report includes sustainable practices for the building system's infrastructure upgrades.

Methodology:

The design team reviewed as-built conditions and visited the Pierce Hall building twice to observe the Electrical Distribution System, Lighting, Fire Alarm and Low Voltage Systems.

Systems' Classifications:

The following classifications were used to document the equipment and systems conditions throughout the report:

- Good: Equipment is in top working condition. Category applies to new equipment that has recently been installed.
- Fair: Equipment is in moderate working condition. Category applies to equipment that has been in service for some time, having an acceptable performance level but approaching the end of its useful service life expectancy. Equipment under this category is recommended to be replaced the next time it fails or requires major repair work.
- Poor: Equipment is in an undesirable working condition. Category applies to equipment with a high potential of failure, past its useful service life, and in need of replacement. Equipment under this category is recommended to be replaced.

Applicable Codes:

The following applicable codes were used in this review:

- California Building Code (CBC), 2013 Edition
- California Electrical Code (CEC), 2013 Edition
- California Energy Code (Title 24), 2013 Edition
- UC Sustainable Practice Policy

9.2 EXISTING SYSTEMS ASSESSMENT AND RECOMMENDATIONS

9.2.1 General

The existing electrical switchgear is as originally installed in the mid-sixties; both the Medium Voltage and 208/120Volt show signs of aging and have served their useful life. The majority of the lighting fixtures, except for a few remodeled offices on the first floor, are old with evidence of rust and discoloration; wiring devices have outdated Bakelite Insulation. Insufficient number of wall outlets are scattered throughout each room and show some signs of rust. The building is served by Simplex's 4100U Fire Alarm System, which might require additional hardware to support the devices in the remodeled building.

9.2.2 Medium Voltage Electrical Service

The City of Riverside Public Utilities Substation is the source of power for the University of California at Riverside (UCR). It is located at the west end of the campus. Power is extended from the utility substation at 4160V and 12,400V in a loop distribution system.

Pierce Hall, except for the addition built in the year 2000, is serviced by feeders 2, 6, and 7 in a loop system. According to the 2011 UCR East Campus Electrical Distribution System Report, the existing distribution is adequate to service the existing facility.

Recommendations:

Extend the 12.47KV feeder from Vault V-29 located on the south side of Bourns Hall and terminate it at a new unit substation, designated as US-PH1 and located in the Basement. Switching from 4,160V primary to 12.47KV to service Pierce Hall, is in alignment with the recommendations made in the 2011 UCR East Campus Electrical Distribution System Report.

The unit substation US-PH1 will service the Classroom Building and the North Addition. Substations US-PH2 and US-PH3 will service the center wing and south wing, respectively. The above noted three substations will step down the 12.47KV primary power into 480/277Volt, 3-Phase, 4-Wire utilization voltage.

9.2.3 Emergency Service

Currently, a 95KW/118.75KVA, 208/120V generator by Katolight is located in the areaway adjacent to the center wing basement Electrical Room. A second generator 15KW/18.75kVA by Generac is located on the roof.

The amount of emergency power allocated to the laboratory areas is projected to be 6.6VA/SF and 1VA/SF in non-laboratory areas. Applying these same parameters to the Pierce Hall infrastructure upgrades results in an estimated emergency load of 560kVA.

Recommendations:

The existing generators are not adequate to service the estimated emergency power loads for the anticipated Pierce Hall infrastructure upgrades. Our recommendation is to replace the two existing generators with a new 600KW, 480/277Volt, 3-Phase, 4-Wire generator to service Pierce Hall. Multiple locations for the new generator were evaluated including the areaway where the existing 95KW generator is located. This area was deemed to not be large enough to house the new generator. The team agreed that the best location for the new generator is at grade level in the loading dock area. Walls to protect the generator are recommended for security, noise mitigation and aesthetic reasons.

9.2.4 Power Distribution – Utility

The original building electrical design concept provides one or more unit substations in the basement under each wing. The substations step down the 4160V to 208/120 Volts, 3-Phase, 4-wire. The output of each substation is terminated at a distribution switchboard that is utilized to service the load of the associated wing of the building. Feeders are extended from said switchboards and terminated at panelboards and motor control centers. Some panelboards are located in closets, others are in corridors.

Recommendations:

The proposed design should allow for power panelboards on each floor to service the panelboards on that floor. Single panelboards will be dedicated to each lab. This is done in order for the building to have spare distribution capacity and to allow for easier future upgrades.

9.2.5 Power Distribution – Emergency

A 1200A 480/277V, 3-Phase, 4-Wire switchboard EDA will be provided at the north end of the tunnel in the Basement, with an underground feeder extended from it to the new generator. Adjacent to EDA, there will be two Automatic Transfer Switches (ATS), one strictly for egress lighting (ATS-LS) and the second for all other emergency power needs in the building (ATS-ES).

Recommendations:

On the load side of ATS-LS and ATS-ES, provide a Distribution Panel and a switchboard to service the emergency power needs of each building wing.

9.2.6 Power Distribution Equipment Condition

9.2.6.1 5KV Oil Immersed Medium Voltage Switch Units

There are two 5KV oil immersed switch units made by G&W Electric Company; both are old and obsolete. The switch for substation 3 outside the Electrical Room under the center wing shows oil leakage. It is likely that this oil contains PCB.

5KV Oil Immersed Switch Unit with Traces of Oil Leakage

Recommendations:

Replace existing switches with air switches or 15KV fusible switches.

9.2.6.2 Unit Substations

The unit substations are made by Square-D, 1960’s vintage; they are past their nominal service life span. Labels posted on the substation transformers warn that they contain oil that has PCB; the main circuit breakers on the low voltage side are by made by ITE, which was purchased by Siemens 10 years ago; they have confirmed that they do not maintain replacement parts for these circuit breakers. Consequently, the only replacement circuit breakers available will be reconditioned.

Existing Unit Substation #1 Transformer with PCB

Recommendations:

Replace the substations with modern units, including dry type transformers and modern circuit breakers with integral electronic trip units, and metering units for remotely monitoring the electrical parameters of the circuit breakers. It is recommended to replace the 4160V feeders and equipment.

9.2.6.3 Distribution Switchboards and Motor Control Centers

The equipment is old and has been in service for more than 45 years; replacement parts are not available.

Recommendations:

Replace the existing distribution switchboards and Motor Control Centers with state of the art equipment.

9.2.6.4 Panelboards

Panelboards are old; most doors do not have working locking mechanisms. The majority of the panelboards are by Square-D, model NA1B and NHEB; both models are obsolete and replacement parts are not available.

Panelboard With Broken Locks

Recommendations:

Replace the panelboards throughout with state of the art panelboards.

9.3 LABORATORIES

9.3.1 Lighting

Lighting is provided by continuous rows of 1 x 4 suspended fluorescent fixtures with prismatic lenses. They are the original fixtures from when the building was built in the mid-sixties; in some cases they have been retrofitted with T-8 lamps and ballasts. The majority of the lenses are discolored, warped and edges are worn out so the lenses cannot be held in place. Rust is evident in the housing of the majority of the fixtures.

Laboratory lights with discolored lenses

9.3.2 Wiring Devices

Wiring devices are sparsely located along the walls of the laboratories and classrooms; they are the outdated Bakelite insulation type. There are two 4S outlet boxes per bench with either two or three duplexes. Most of these boxes show sign of rust.

Rusted outlet at Lab bench

9.3.3 Panelboards

In some of the laboratories residential type load centers are installed. Doors on some of these load centers do not operate.

Minimum Receptacles on Laboratory Walls

Recommendations:

- The laboratory lighting fixtures are required to be replaced in order to comply with 2013 Building Energy Standards Title 24 and UC Regents' requirement to meet energy efficiency goals. Existing fixtures will be replaced with new LED lighting fixtures and lighting controls.

- The existing wiring devices at the laboratory benches and along the walls are old, outdated and have Bakelite insulation; upon going through the heating and cooling cycles, may have become brittle and discolored. The electric industry has substituted the Bakelite material with nylon and Valox thermoplastic resin for more than 25 years. Replacing these devices is recommended.

- The residential load centers are light duty and not intended to be utilized in a laboratory setting. Providing a dedicated new panelboard for each laboratory will alleviate the need to add panels inside the laboratories.

Interior of Load Center with plug-in circuit breakers & sheet metal latch

9.3.4 Administrative Area and Corridors

Except for two administrative areas on the first floor, the lighting fixtures in the administration areas and corridors are fluorescent type with prismatic acrylic or opal lenses; they appear to have been installed when the building was built. These have been retrofitted with T-8 lamps. Many of the lenses are falling, others are held in place by temporary means such as metallic brackets attached to the lighting grid to hold the lens in place. Some of the lighting fixtures housing show signs of rust.

Wiring devices in corridors and offices are the old Bakelite insulated type, which has been obsolete for over 25 years.

Recommendations:

Replace lighting fixtures throughout in offices, corridors and administrative areas with energy efficient LED lighting fixtures; operational efficiencies will pay for themselves within a few years due to energy and maintenance cost savings; the LED service life is 50,000 hours compared to 16,000 hours average hours of fluorescent lamps. The fluorescent fixtures can go through three re-lamping cycles before the output of LED fixtures is dropped to 70% of its initial Lumens.

Corridor Light Fixture
Lens Held in Place by Bracket

The wiring devices have long served their service life and should be replaced with modern nylon based devices.

9.3.5 Power Utilization

Branch Circuits at 480 Volt 3 Phase will be utilized for all new HVAC and Plumbing equipment, elevators, and any specific equipment; 277 Volt Circuit for LED lighting throughout; 208 Volt and 120 Volt Circuits for general convenience outlets and miscellaneous power.

The design team proposes to step down the 480 Volt, 3-Phase power available at the basement unit substations and establish 208/120Volt 3Phase 4Wire switchboards in the basement, with feeders extended up to one or two 1200A power panels on each floor in each wing. These power panels will be utilized to extend power and terminate at each panelboard dedicated to each lab. This will help in future renovations by having power available in the proximity of laboratories.

Lighting on 480/277 Volt system has two main advantages over the current 208/120 Volt system. First, the branch circuit current at 277 Volt will be 43% of the current at 120 Volt for a given lighting load. This will result in lower voltage drop, lower energy loss and a more efficient circuit. Secondly, at 277 Volt 56% lesser number of circuits are required to wire a given space than at 120 Volt level. This will result in lesser number of circuit breakers in the lighting panel and lesser number of homeruns, therefore, lower costs. This is at the branch circuit level.

The advantages of utilizing 480V rather than 208V for 3-Phase large loads are:

- The full load current of the equipment will be 43% of that at 208V.
- The feeder size will require smaller conduit and conductors resulting in installation cost savings.
- The voltage drop will be less; therefore, the energy loss will be less.
- The switchboard servicing the large loads will have approximately half of the bus rating at 208V; therefore, reducing the installation cost as well as reducing the carbon emission.

In order to estimate the loads and size the electrical distribution equipment, historical data is used from similar projects, which use 31VA/s.f. normal load in laboratory areas and 20VA/s.f. in non-laboratory areas. These preliminary assumptions will be reviewed periodically during the design phases to confirm the assumption and adjust the calculations if required.

9.4 CLASSROOM BUILDING

The Classroom Building will be serviced through the substation in the north addition electrical room in the basement. Normal and Emergency panelboards will be located in a portion of the A/V/IT Room to service the classrooms.

Continuous pendant rows of LED lighting fixtures with indirect illumination will be utilized to create uniform illumination with 500-600 Lux (50-60 fc) intensity. Lighting controls will include 0-10v dimming. Low voltage photocells, motion sensors and override switches at the entries. Low Voltage Control System will enable the faculty to control the lights from a station in proximity to the lectern.

Convenience outlets will be located along the walls, close to the lecturer's station. Floor outlets will be provided for the student's convenience.

9.5 FIRE ALARM SYSTEM

The original Autocall Fire Alarm System has been replaced by Simplex 4020 Fire Alarm Control Panel (FACP) and devices. The 4100U FACP was added to upgrade the system. These panels are located in the basement South Electrical Room. The original building design was upgraded by providing heat detectors in the laboratories as well as remodeled non-laboratory areas and adding the Simplex 4100U FACP.

FACPs in Basement Unit Substation #1 - Electrical Room

Recommendations:

- Utilize the 4100U FACP and add new cards as needed to support new Fire Alarm devices.
- Add smoke detectors in the non-laboratory areas and the new classroom building.
- Add strobes/horns in corridors and strobes in public restrooms throughout.
- Interface between the Fire Alarm and lab HVAC systems.
- Confirm the 4100U is networked with the campus network.

FACP Simplex 4100U

9.6 LOW VOLTAGE SYSTEMS

9.6.1 Voice / Data System Optical Fiber

The existing fiber service entrance is currently terminated in the sub-basement level on a floor mounted rack in the south Electrical Room. The location of the rack is in violation of the working clearance in front of the distribution switchboard at the north end of the room. The fiber cables are distributed to various IDF Rooms in the Building utilizing air blown fiber (ABF) tubing by Future-Flex ABF/Sumitomo Electric Lightwave Company. Fiber cables are terminated on the fiber termination unit inside each IDF Rooms.

Recommendations:

- Move the existing rack within the space to achieve the code clearance for the existing electrical distribution system.
- Continue utilizing ABF to feed the new IDF Rooms that will be created in the scope of work of this project using Tube Distribution units or conventional fiber with innerduct.
- Provide Telecom Main Ground Bus (TMGB) near the rack.

9.6.2 Voice System

The existing Main Telephone Terminal Backboard (MTTB) is located in the basement area.

One- 50 pair Riser Cable connects each IDF Room and the MTTB. Cables are terminated on 66 wiring blocks in the basement and on 48-port voice patch panel in the IDF room.

Recommendations

- Identify, organize and remove unused telephone cable on the MTTB.
- Maintain 3'-0" minimum clearance in the front of the MTTB.
- Label cables per UCR labeling requirements.
- Provide new Ground Bus (TGB) and bond between MTGB and TGB.
- Provide new 50 pairs Riser Cable between MTTB and new IDF Rooms. Utilize same method of termination.

9.6.3 Back Bone of Voice / Data System

The existing Back Bone between Fiber Terminal Cabinet at the Sub-Basement Level and various IDF Rooms is utilizing conduits and sleeves, quantities and size of conduits vary depending on the IDF Room size and existing conduit serving the room.

Existing Main Telephone Terminal Cabinet

Existing Fiber Terminal Cabinet

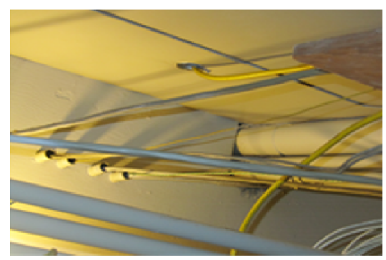
Recommendations:

- Provide (3) 3”C.O. from the Sub-Basement Level to the 1st floor BDF Room.
- Provide new (3) 4” C.O. sleeves between 1st floor and 2nd floor IDF Rooms and same between 2nd and 3rd Floor IDF Rooms.
- Provide (3) 3” C.O. from the 1st floor BDF Room to the new IDF Room in the new Classroom Building.
- Each IDF Room will be fed by (7) ABF tubes or conventional fiber with innerduct to be terminated on fiber terminal unit for minimum (12) strands single mode fiber to be terminated.
- Provide (2) 3” C.O. from MTTB in the Basement to the 1st floor BDF Room.
- Each IDF Room will be fed by 50 Pairs Cables from the MTTB and to be terminated on 48 Port Patch Panel.

9.6.4 Horizontal Distribution System

Currently the existing copper cables are running above ceiling using J-hooks, conduits and sleeves. Firestopping is missing in some places.

Example for Existing Horizontal Distribution System



Example for Existing Horizontal Distribution System

Recommendations:

- Conduits: Will be utilized in non-accessible areas from typical outlets to the cable tray.
- Cable Trays: New Cable Trays will be provided in the corridors; they will be coordinated with other trades.
- Sleeves: Will be provided where rooms have accessible ceiling and conduits for individual outlets will stub up 6” above the accessible ceiling.
- J-Hooks: Will be utilized between accessible areas and cable trays.
- Perimeter Raceway Systems: Will be used in open offices with modular furniture or where it is not possible to conceal conduits for outlets in the wall.
- Horizontal Cables: Shall be CAT 6 Plenum Rated for Voice & Data; this is a standard for campus horizontal cable.
- Voice/Data Outlet Connector Configuration: Typical Campus Standard for Voice/Data outlets in an office is (3) drops (1) voice/(2) data and as stated in the Communications Infrastructure Planning Guidelines for UCR.

9.6.5 Telecommunication Spaces

The current IDF Rooms and/or Closets in the building are not adequately sized per BICSI and TIA recommendations. Some rooms do not have the proper HVAC requirements.

Example of Limited Area IDF Closet

Recommendations:

- Maintain communications pathways in existing IDF Rooms #1239, 2239 & 3323.
- Provide (3) New IDF Rooms, one per floor in the 1st and 2nd floor. Rooms #1233 and 2233 are ideal to consolidate the IT equipment/ Racks. Appropriate cooling will be provided based on the heat generated by the equipment in the Racks.
- Minimum room size shall be 11’-0”x10’-0” to accommodate (3) floor mounted racks 7’-0” minimum.
- Third Floor proposed IDF Room #3325 is adjacent to the elevator; space is to be confirmed during the design phase.
- For the new classroom building a new 11’-0” x 10’-0” BDF Room to be added to support the Voice/Data and AV Systems.

9.7 AUDIO VISUAL NEW CLASSROOM BUILDING

200 seat sloped floor lecture Hall will require:

- Dual HD Projectors with an aspect ratio of 16:9 and HD resolution controllable via RS232
- (2) TV displays with 16:10 aspect ratio with HD resolution controllable via RS 232
- Media cabinet with (2) racks minimum
- Document camera, computer, monitor and program Audio
- PA System with wireless lapel and wireless microphone
- Media control panel (Touch link)
- Assisted listening systems
- Interface with wireless local area network (WLAN)

9.8 WI-FI SYSTEM

The existing WI-FI access points are located in the corridors throughout building.

Recommendations:

- Maintain existing AP during remodeling and as needed per UCR requirements inside the Classroom.
- All work for WI-FI and access panels will follow the Voice/Data requirement for cabling with the following recommendations for AP placement.
- UCR to provide Site Survey to indicate locations for Access Panels.
- (1)AP per 1100 SF. is minimum requirement for wireless coverage.
- Each AP will be fed with (2) CAT 6 cables.
- Provide new Access Points in the new Classroom Building

9.9 CONCLUSION

Based on our observations, we recommend replacing the switchgear, associated feeders, lighting fixtures, and wiring devices. The Fire Alarm control panel is a current product and could be continued to be used, with some modifications required to support the upgrade to Fire Alarm System in the building.

For Low Voltage Systems we recommend providing the three (3) Telecommunication Rooms, one per Floor, and standardizing the outlets to match UCR Telecommunication Guidelines as well as providing the new AV/IT Room in the new Classroom Building.

10.0

DESIGN CRITERIA PIERCE HALL IMPROVEMENTS & INTERIOR IMPROVEMENTS

10.1 INTRODUCTION

Pierce Hall is a centrally located core-campus building of 66,735 assignable square feet (ASF) and 114,477 gross square feet (GSF) which originally accommodated instruction and research facilities for the Chemistry Department. In 2005 most of the faculty research functions relocated from Pierce Hall to the Chemical Sciences Building. Pierce Hall now houses multiple instruction and research programs.

Current Pierce Hall occupancy profile includes: Chemistry, Biochemistry, Earth Sciences, Environmental Sciences, Physics and Astronomy, Plant Pathology and Microbiology, Mathematics, Electrical Engineering, Mechanical Engineering, Bioengineering, and Undergraduate Academic Advising for the College of Natural and Agricultural Sciences. The proposed building infrastructure project will upgrade building MEP systems infrastructure, and optimize building performance and operating efficiencies (e.g. energy, water, chilled water usage). These infrastructure improvements will allow for future program based renovations within the existing facility to address evolving teaching and research needs, principally in the wet-laboratory science based disciplines.

Pierce Hall infrastructure upgrades will extend the useful life of the existing facility in a cost-effective manner to support wet-laboratory based instructional programs and low to medium-intensity research. Pierce Hall interior improvements will allow for renovation of selected laboratories, including casework, fume hoods, sinks, interior finishes, lighting and MEP within the labs as a separately funded project.

Campus Core Site Plan

10.2 GOALS

The primary building goals of the Pierce Hall Improvements project are:

1. Renewal and replacement of the building systems, addressing a number of the key infrastructure deficiencies, including Heating Ventilation and Air Conditioning (HVAC) Electrical System, Plumbing and Laboratory Gases, Fire Protection, hazardous materials abatement, piped services, and functional equipment.

2. Provide for an energy efficient building system that responds to changing technological and functional requirements for science and engineering programs while lowering energy related operating costs.

3. Cost effectively extend the useful life of a strategically located core campus teaching and research asset.

4. Allow the future implementation of program based remodels in Pierce Hall to expand UCR's inventory of laboratories for both Research and Teaching.

5. Fully renovate existing restrooms to be accessibility compliant and add gender inclusive facilities on each floor.

6. Provide new general assignment classrooms in a central campus location to support both undergraduate and graduate programs, particularly in STEM disciplines.

The primary Working Group goals for the Pierce Hall Improvements project are:

1. Assess existing building infrastructure and prioritize existing building interior improvements by level of renovation.

2. Prioritize extent of renovation required to extend the useful life of the building.

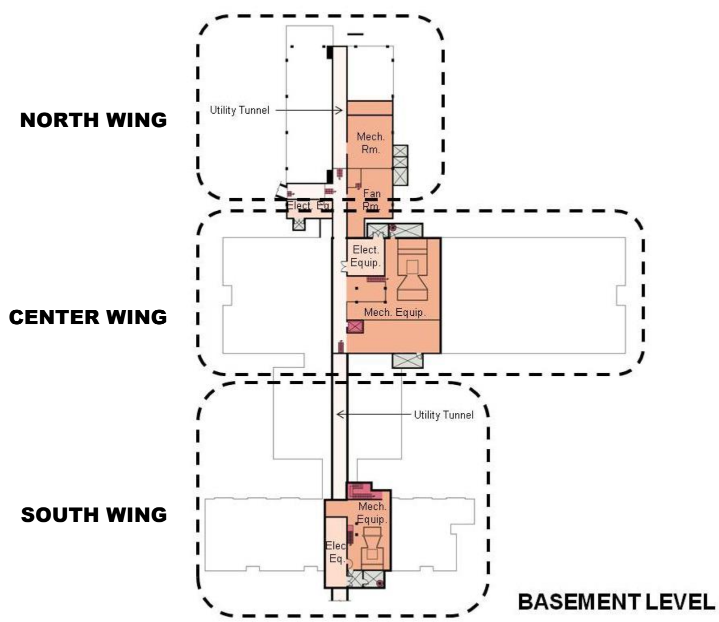
3. Evaluate the estimated construction cost of the renovation and reconcile with the established budget.

4. Establish a methodology for phased renovation and an estimated duration of construction to accomplish the proposed renovation.

5. Develop a comprehensive laboratory planning program to establish the future direction of renovated spaces.

10.3 METHODOLOGY

- Extensive survey and analysis of the existing building was conducted in order to understand the existing conditions and to establish guidelines and priorities for the renovation.
- An investigation of the existing building conditions and review of the original construction drawings revealed that the building design established mechanical basements under each building wing, with fresh air intake at grade through areaways, and laboratory exhaust separated at the roof. High velocity laboratory exhaust fans and hood manifold systems were added at the roof.
- Evaluation of the existing building exterior envelope established that the envelope is primarily pre-cast concrete panels, with ribbon windows at the first floor, and clerestory windows at the third floor below the roof. The pre-cast panels remain serviceable, but the window system, exterior doors, and roof require replacement for water intrusion and energy efficiency.
- Analysis of existing MEP systems established that the systems, being 60 years old, are beyond their serviceable lifespan, and need complete replacement.
- A room by room survey was conducted and a hierarchy of renovation levels was established. It was determined that all areas of the building require renovation: baseline, moderate, or full. The majority of the building areas require full renovation. Refer to Existing Conditions Matrix Section 4.5 for detailed building evaluation.
- The renovation scope was divided into two projects:
  Pierce Hall improvements scope – infrastructure upgrades
  Pierce Hall interior improvements scope – laboratory upgrades
- Phasing options were established by building wing and floor. The phasing options are: 1 phase, 2 phases, 3 phases, and 6 phases. Construction timelines were established for each phasing option.
  Budget allocations were estimated for the infrastructure scope, the Interior Improvement scope, and the phasing durations.



10.4 PROJECT SCOPE

The proposed building infrastructure systems portion of the project will update outmoded MEP systems and will address the impacts of these updates on current code compliance:

a. Heating, Ventilation, and Air Conditioning System Upgrade.
   i. Change from constant to variable volume heating, cooling and distribution throughout and replace or refurbish air handling units, valves, fans, pumps, heat exchangers, and control systems.

b. Electrical System.
   i. Provide a new 480v/277v transformer substation and distribution boards for distribution to new 480v/277v equipment in the basement.
   ii. Install new lighting panel board breakers (277v), conduit and 277v lighting.

c. Plumbing Systems.
   i. Replace existing compressed air system (including valves, receiver, dryer, filters and controls) with new compressed air system.
   ii. Replace existing vacuum air system (including duplex, receiver, valves and controls) with new vacuum air system.
   iii. Replace existing deionized-water systems (including storage tank, pumps and controls) with new deionized-water systems.

d. Fire Protection Systems.
   i. Replace existing control panel with a new panel; install new stand pipes complete with fittings on each flight and install a complete fire sprinkler system.

e. Hazardous Materials.
   i. Remove/abate all hazardous materials encompassed within the scope of the renovations and replace with appropriate materials for the specified use (e.g. asbestos, lead based paint, etc.)

f. Disabled Access.
   i. Correct all non-compliant conditions relative to currently applicable accessibility regulations.

g. Building Shell.
   i. Repair and replace roof membrane, and replace windows, and provide waterproofing at ground level.

h. Seismic Upgrades.
   i. Building Structure has been analyzed by Nabih Youssef Structural Engineers; the report indicates no seismic improvements are required.

i. Sustainability.
   i. The intent is to implement the UC-system's sustainability goals as they relate to this project, exploring the use of innovation and technology to identify potential contributions toward the 2025 carbon neutrality goal, and the Regent's requirement of LEED Silver. The project will meet the new minimum mandatory requirements of the 2013 Building Energy Efficiency Standards Code, Title 24, Part 6 and Associated Administrative Regulations in Part 1 and UCOP Green Building Policy.

Aerial View of Roof

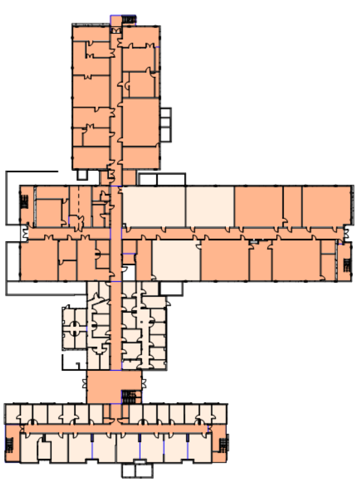
Roof Mechanical Well

Building Infrastructure:

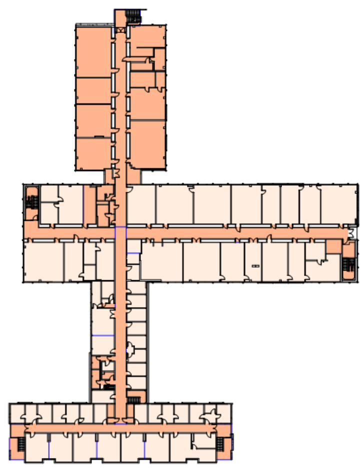
The shell and core upgrade of the existing building infrastructure includes full renovation to MEP systems in the basement and roof, vertical distribution of MEP systems and horizontal distribution in the corridors and restroom upgrades on all floors and all wings.

Interior Upgrades:

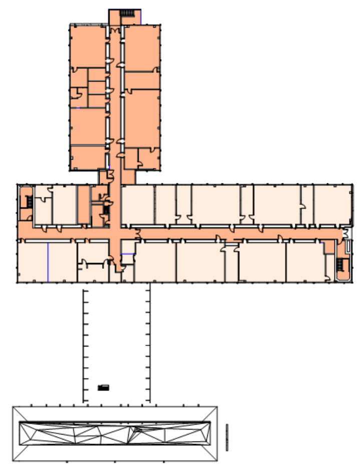
The interior improvements will upgrade approximately 35% of the assignable area, including Instructional labs in the north wing first and second floors, research labs on the north wing third floor and instructional labs and support on the center wing first floor.



First Floor



Second Floor

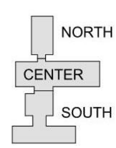


Third Floor

Renovation Level

- 1- BASELINE RENOVATION
- 2 - MODERATE RENOVATION
- 3 - FULL RENOVATION

Key Plan

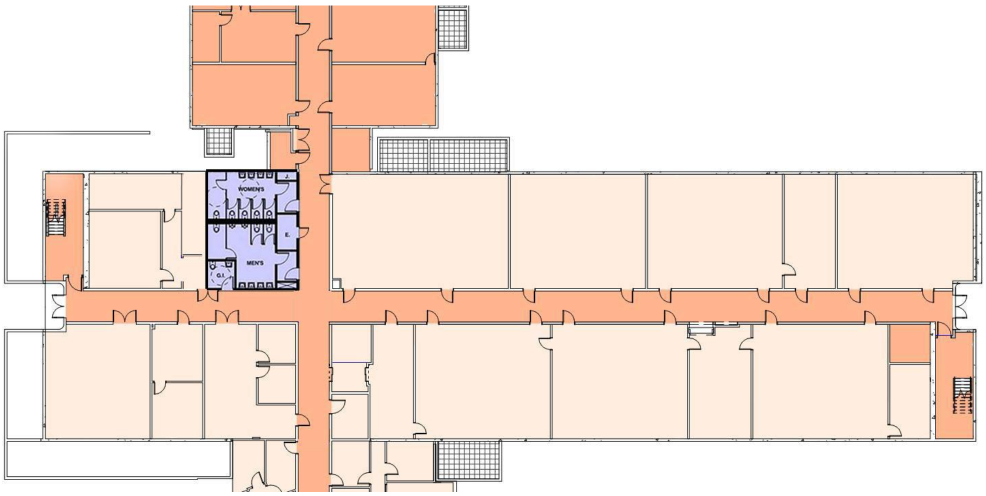


Interior Upgrades Program (ASF)

Proposed Interior Upgrades Program (ASF)							
Wing	**Room Type**	**Floor**	**Qty.**	**ASF**	**Total**	**No. Stations**	**Notes**
North	Research Lab Flex 2	3	4	601	2403		Supports 4 Pis, 8 PD and 16 GS
	Lab Support	3	7	264	1848		
	Office Grad Stud, PD	3	4	275	1100		24 stations
	Total Third Floor ASF				**5351 asf**		
	Class Laboratories	2	4	1188	4752	96	New Class Lab
	Lab Support	2	2	277	554		
	Total Second Floor ASF				**5306 asf**		
	Class Laboratories	1	4	1188	4752	96	New Class Lab
	Lab Support	1	2	369	738		
	Total First Floor ASF				**5490 asf**		
Center	Class Laboratories	1	4	Varies	4219	96	Renovation existing class labs
	Lab Support	1		Varies	4237		Shares support with exist. teaching labs
	Total First Floor ASF				**8456 asf**		
Grand Total ASF / Stations					**24603 asf**	**288**	

Restroom Upgrades:

Provide new restroom facilities on all three floors to be ADA compliant, and add gender inclusive facilities. Provide a 70 ASF Lactation Room on one floor; final location will be determined during the design phase.



First Floor

The result of the restroom upgrade is a reduction of 750 ASF for all three floors. The breakdown of the ASF change by floor and by wing is as follows:

Existing ASF by Wing and Floor				
Wing	**1**	**2**	**3**	**Total**
North	5,490	5,306	5,351	**16,147**
Center	12,188	11,796	11,795	**35,779**
South	8,024	6,785	0	**14,809**
ASF/ Floor	**25,702**	**23,887**	**17,146**	**66,735**

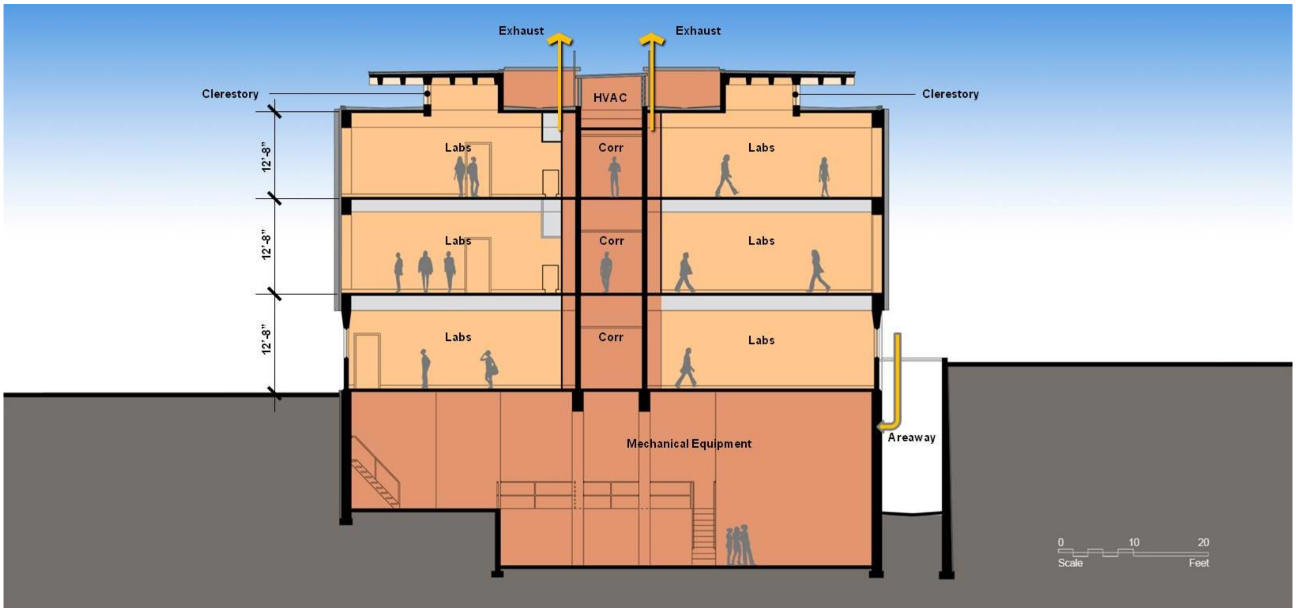
Proposed ASF by Wing and Floor				
Wing	**1**	**2**	**3**	**Total**
North	5,490	5,306	5,351	**16,147**
Center	11,938	11,546	11,545	**35,029**
South	8,024	6,785	0	**14,809**
ASF / Floor	**25,452**	**23,637**	**16,896**	**65,985**

For a complete proposed ASF breakdown by wing, floor, and room type refer to page 10.

Building ASF Program

Proposed Assignable Area by Wing, Floor and Room Type					
Wing	**Room Type**	**1**	**2**	**3**	**Total**
North	Inactive	0	0	0	0
	Classroom	0	0	0	0
	Research and Support	0	0	5351	5351
	Class Lab and Support	5490	5306	0	10796
	Offices	0	0	0	0
	Study	0	0	0	0
	Other	0	0	0	0
	Total ASF / Wing /Floor	**5490 asf**	**5306 asf**	**5351 asf**	**16,147**
Wing	**Room Type**	**1**	**2**	**3**	**Total**
Center	Inactive	0	0	941	941
	Classroom	0	0	787	787
	Research	0	6529	3871	10400
	Class Lab and Support	11938	2227	5690	19855
	Offices	0	2084	256	2340
	Study	0	0	0	0
	Other	0	706	0	706
	Total ASF / Wing /Floor	**11938 asf**	**11546 asf**	**11545 asf**	**35,029**
Wing	**Room Type**	**1**	**2**	**3**	**Total**
South	Inactive	278	0	-	278
	Classroom	0	0	-	0
	Research	2077	2817	-	4894
	Class Lab	0	0	-	**0**
	Offices	5042	3968	-	**9010**
	Study	401	0	-	401
	Other	226	0	-	226
	Total ASF / Wing /Floor	**8024 asf**	**6785 asf**	**-**	**14,809**
	Total ASF / Floor	**25,452**	**23,637**	**16,896**	**65,985**

Infrastructure Improvement Scope



Assignable Area By Wing & Floor

NORTH WING LABS

1st FLOOR	-	5,490
2nd FLOOR	-	5,306
3rd FLOOR	-	5,351
TOTAL		16,147 ASF

CENTER WING LABS

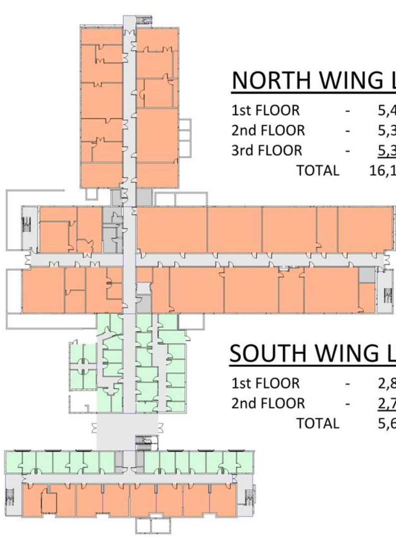
1st FLOOR	-	12,188
2nd FLOOR	-	11,796
3rd FLOOR	-	11,795
TOTAL		35,779 ASF

SOUTH WING LABS

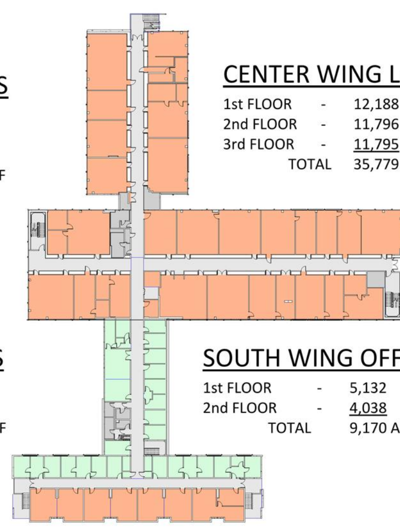
1st FLOOR	-	2,892
2nd FLOOR	-	2,747
TOTAL		5,639 ASF

SOUTH WING OFFICES

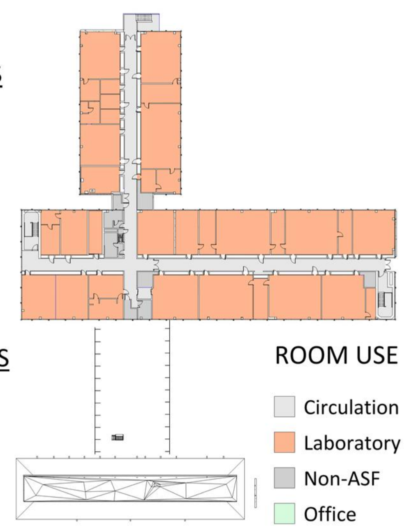
1st FLOOR	-	5,132
2nd FLOOR	-	4,038
TOTAL		9,170 ASF



First Floor



Second Floor

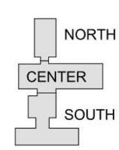


Third Floor

ROOM USE

- Circulation
- Laboratory
- Non-ASF
- Office

Key Plan



10.5 PHASING TIMELINES FOR CONSTRUCTION

One Phase:
All wings shut down for construction **Total: 24 Months**

Two Phases:
1. North Wing and South Wing: MEP Infrastructure all floors including basement; North Wing: Interior renovation all floors Classroom Addition, Loading Dock — 12 Months
2. Center Wing: MEP Infrastructure all floors including basement; Center Wing: Interior renovation first floor — 18 Months

Total: 30 Months

Three Phases:
1. North Wing: MEP Infrastructure all floors including basement; North Wing: Interior renovation all floors Classroom Addition, Loading Dock — 12 Months
2. South Wing: MEP Infrastructure all floors including basement; — 10 Months
3. Center Wing MEP Infrastructure all floors including basement; Center Wing: Interior renovation first floor — 18 Months

Total: 40 Months

Six Phases:
1. North Wing: MEP Infrastructure all floors including basement; North Wing: Interior renovation all floors Classroom Addition, Loading Dock — 12 Months
2. Center Wing: Phases 2A, 2B, 2C MEP Infrastructure all floors including basement; Center Wing: Interior renovation first floor — 30 Months
3. South Wing Phases 3A, 3B; MEP Infrastructure all floors including basement; — 16 Months

Total: 58 Months

Pros & Cons of Phasing Timelines

One Phase:
- This option reduces the length of construction and allows more of the budget to be spent on building improvements.
- Requires relocation of all programs. The workshop group considers this unrealistic.

Two Phases:

- This option allows for partial renovation and combines the classroom / loading dock construction with north and south wings. The larger center wing would proceed after relocating existing programs to the recently renovated north and south wings. The construction duration is considered to be acceptable within the University guidelines.
- **This is the Working Group preferred option.**

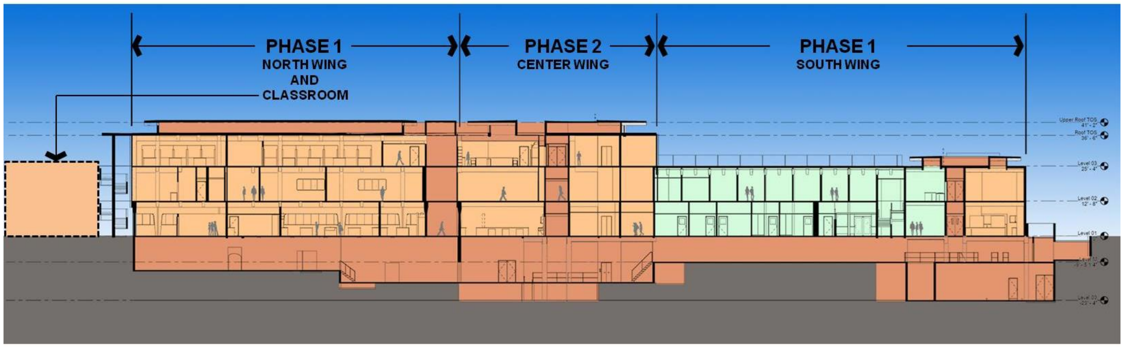
Three Phases:

- This option allows for renovation by wing, offering more opportunity to relocate existing program.
- The construction timeline is considered too long for effective cost management.

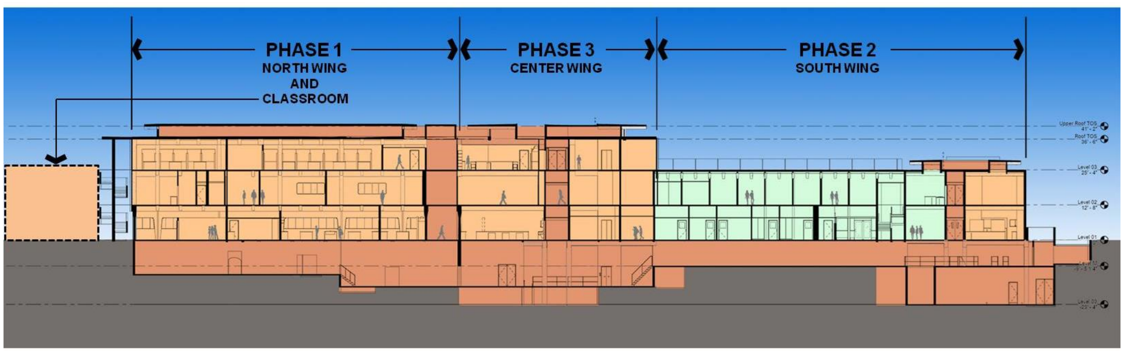
Six Phases:

- This option allows for renovation by wing and floor, offering more opportunity for relocation and phasing.
- Requires temporary HVAC and electrical support during construction.
- Construction timeline is considered too long and temporary utility requirement too costly to be an efficient option.

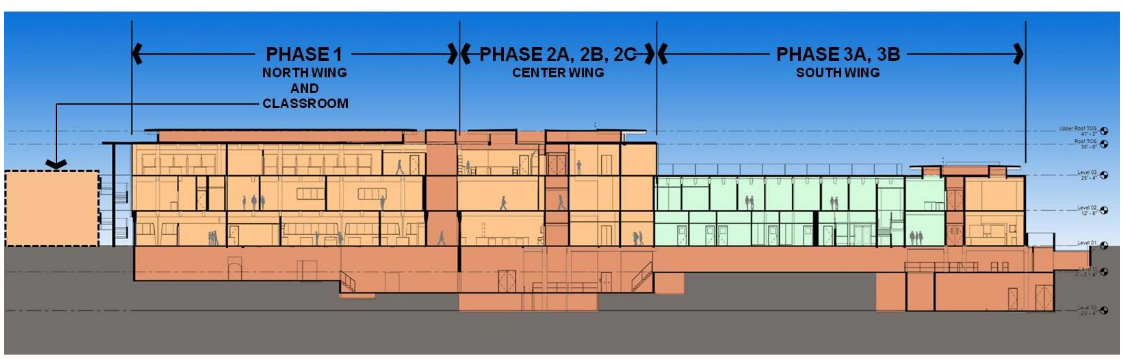
2 Phase Strategy - By Section



3 Phase Strategy - By Section



6 Phase Strategy - By Section



10.6 COST ANALYSIS

PIERCE HALL IMPROVEMENTS - ESTIMATED COSTS:
Costs as shown are construction costs and are current 2016 costs.

Pierce Hall Improvements

UCR Budget	**$ 28.5M**

Infrastructure Upgrades Estimated Construction Costs:

North Wing Estimate	$ 5.9M
Center Wing Estimate	$ 13.1M
South Wing Estimate	$ 6.0M
Classroom Addition & Loading Dock	$ 5.0M
Total	**$ 30.0M**

Pierce Hall Improvements Scope
- MEP Replacement in Basement, Vertical Distribution, Adjacent to Corridors
- Phoenix Valves for Variable Volume Supply and Return, and Ducts For Room Air Supply
- Corridor Renovations - Utilities and Finishes
- Exterior Glazing and Roofing
- Ground Level Water Proofing
- Sprinklers
- Limited abatement, ADA Upgrades and Restrooms

PIERCE HALL INTERIOR IMPROVEMENTS - ESTIMATED COSTS:

Laboratory Interior Improvement Upgrade

Revised UCR Budget	**$13.8M**

Interior Improvements – Estimated Construction Costs:

North Wing Estimate	$ 6.8M
Center Wing Estimate	$ 14.9M
South Wing Estimate	$ 4.2M
	$ 25.9M

Interior Improvement Scope
Hoods and Sinks
Finishes – Flooring / Paint
Casework
Walls – New & Repaired
LED Lighting
MEP distribution within the Labs

Cost Guideline Assumptions
- Rough Order of Magnitude developed based on:
  - Historical Guidelines for Lab Buildings of Similar Size
  - Regional Cost Factor
  - Specific Program – Instructional and Research Labs

Refer to Section 15 of this report for Cost Estimate Details

10.7 CONCLUSIONS

- The extensive survey, analysis, and evaluation of existing building systems, and existing building envelope, corridors and laboratories, confirms the need for full upgrade and systems replacement.
- The location of primary mechanical, electrical and plumbing systems in the mechanical basement under each wing, confirms that renovation should be phased by a wing at a time.
- An analysis of projected remodeling costs and comparison to the established budgets demonstrates that the budget will be sufficient to achieve Pierce Hall infrastructure improvements, a one story, 200 seat classroom addition, loading dock configuration, and partial Pierce Hall interior improvements.
- Phasing strategies of 1 phase, 2 phases, 3 phases, and 6 phases were developed and evaluated. The construction timelines for each phasing strategy were estimated to be 24 months, 30 months, 40 months, and 58 months, respectively. The preferred phasing strategy is 2 phases and approximately 30 months of construction. The limited Pierce Hall improvements scope and Pierce Hall interior improvement scope would occur concurrently.
- A two phase strategy will include the following scope:

    Phase 1:
    North Wing and South Wing: MEP Infrastructure all floors including basement;
    North Wing: Interior renovation all floors;
    Classroom Addition, Loading Dock
    Construction duration: 18 months
    Phase 2:
    Center Wing: MEP Infrastructure all floors including basement;
    Center Wing: Interior renovation first floor
    Construction Duration: 18 Months

    This strategy allows for phased construction, with existing programs to be relocated to the renovated north and south wings prior to renovation of the larger center wing.
- The construction phasing requires relocation of existing programs and researchers' one wing at a time. The design team with work with UCR to establish a relocation strategy in order to activate the renovations.

11.0

LABORATORY

INTRODUCTION
LAB DEFINITION
LAB PERSONNEL DENSITY
LAB PLANNING CONCEPT
LAB RENOVATION SEQUENCE
LAB RENOVATION PRIORITY
LAB RENOVATION PATTERN
TYPICAL LAB PATTERN CONCEPT
INSTRUCTIONAL LAB CONVERSION
LAB PROGRAM SUMMARY
ROOM DATA SHEETS

11.1 INTRODUCTION

The lab program was developed based upon a modular approach to lab definition and space planning. Lab prototypes have been defined to differentiate different lab types. Several workshops with science faculty were held in which different lab types and planning options were presented and discussed. The lab program presented herein represents the preferences expressed by science faculty for lab types and planning concepts.

After the programming workshops were completed in June of 2016, the decision was made by UCR to indicate the first and second floors of the north wing as instructional labs, instead of research labs, and to reduce the overall fume hood capacity to 100 chemical fume hoods. This was done in order to address the current classroom need and to support the enrollment growth.

The lab program is based upon the definition of lab prototypes instead of custom design of individual labs. The basic principles that form the basis of the lab program are:

- Open lab suites with up to 6 lab modules combined to create one open lab area. Smaller labs may be created by subdividing the open lab suite.
- Flex type labs have been defined based on the desire to provide flexible, adjustable lab casework systems.
- Fume hood density is the primary factor in determining the lab type definition. There are two basic lab types identified in the program: Flex Type 2 and Flex Type 3. Flex Type 2 labs are labs with medium density fume hoods and Flex Type 3 are single module labs. Flex Types 1 and 4 were not used.

The lab program presented herein shows a vision for the build-out of the labs. It is conceptual in nature, and does not represent the final design. The final design will be balanced with budget constraints and a final lab design will be developed during the design phases. It is likely that the final lab design will be less than the total vision presented in this chapter.

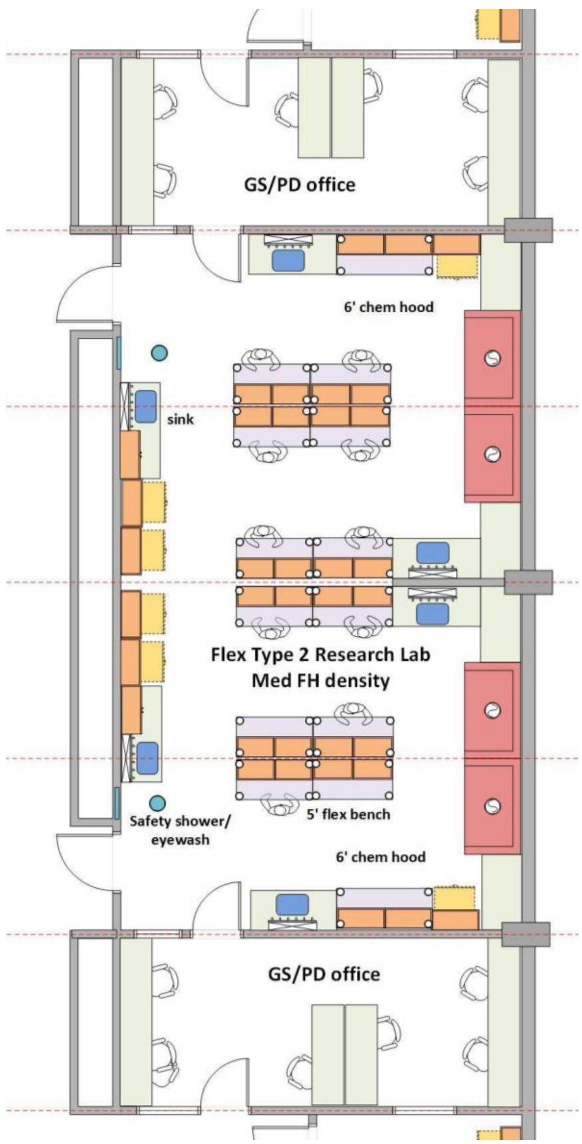
A PATTERN LANGUAGE

The laboratory prototypes have been developed based on a pattern language of laboratory design that fits the context of the Pierce Hall envelope. The patterns of research and instructional labs defined in the program summary are based upon the structural grid (22') and lab planning grid (11'), which provide the most efficient use of space. The pattern of fume hoods, sinks, and casework acknowledge the existing context of Pierce Hall and respond to the needs of science investigators and faculty.

11.2 LAB DEFINITION

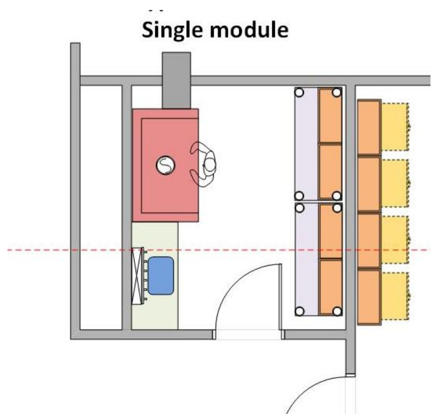
LAB FLEX TYPE 2:

Lab Flex Type 2 is a multi-discipline research lab with **medium fume hood density**, with the MEP infrastructure capacity to double fume hood capacity in the future. Lab modules are combined in an open lab suite, with Grad Student/Post Doc (GS/PD) Offices directly adjacent to the open lab suite. The open lab suite consists of four lab modules with 2 GS/PD offices on either side. The personnel ratio for a typical research lab suite is 2 principal investigators, 4 post docs, and 8 graduate students. The "flex" definition is used due to the inclusion of flexible/adjustable lab casework systems.



LAB FLEX TYPE 3:

Lab Flex Type 3 is a single module multi-discipline research lab with one fume hood. This lab type is for special research requirements that a PI may have which are not conducive to an open research lab suite. The research may consist of explosion hazards or unique use of chemicals that are better handled in a dedicated lab module. The "flex" definition is used due to the inclusion of flexible/adjustable lab casework systems.



11.3 LAB PERSONNEL DENSITY

Each lab unit (a lab unit is defined as a two or three module lab assigned to one Principal Investigator) will accommodate 1 Principal Investigator (PI), 2 Post Doctoral (PD) research personnel, and 4 graduate students (GS). The total capacity for research personnel for the building is as follows:

North Wing-		
Level 3	4 PI; 8 PD; 16 GS	
Level 2	None- instructional labs	
Level 1	None- instructional labs	
Subtotal North Wing-		4 PI; 8 PD; 16 GS
Center Wing-		
Level 3	5 PI; 10 PD; 20 GS	
Level 2	5 PI; 10 PD; 20 GS	
Level 1	None- instructional labs	
Subtotal Center Wing-		10 PI; 20 PD; 40 GS
South Wing-		
Level 2	2 PI; 4 PD; 8 GS	
Level 1	2 PI; 4 PD; 8 GS	
Subtotal South Wing-		4 PI; 8 PD; 16 GS
Total Building Capacity -		18 PI; 36 PD; 72 GS

11.4 LAB PLANNING CONCEPT

The lab planning concept is based upon the application of lab prototypes instead of custom designing labs for specific users. Prototype design provides greater flexibility of lab use over the life of the building compared to custom design. The lab prototypes are defined by fume hood density and degree of flexible casework systems. The basic research lab types are defined as flexible types with medium and high fume hood densities.

Multiple lab modules are combined to create open lab suites. Lab support functions (procedure rooms, instrument rooms, dark rooms, controlled environment rooms, etc.) are located at the ends of the open lab suites and are accessed from the corridor, allowing all lab support rooms to be used as shared functions if desired.

Graduate Student/Post Doc (GS/PD) offices are located immediately adjacent to the open research lab suites, allowing GS/PD staff to move freely between lab and office areas, and also to have direct access to the corridor from the shared office area. This layout will allow GS/PD personnel to have coffee and food in the shared offices.

The system requirements for each discipline are defined as follows:

ARCHITECTURAL:

- Occupancy: All lab areas will be designated as B Occupancy.
- Floors: Appropriate flooring materials for labs consist of sealed concrete, vinyl composition tile, sheet vinyl, and rubber tile or sheet rubber. Sheet vinyl is identified in the lab program as the default lab flooring material.
- Ceilings: Due to the low floor-to-floor height within the existing Pierce Hall, it is recommended that ceilings be open to the structure above. Where possible, ceiling clouds can be used above designated lab bench areas. A ceiling cloud provides the advantages of an enclosed ceiling, such as noise attenuation, dust attenuation, and light reflectance, but keeps the perimeter of the lab area open to the structure for ease of maintenance.
- Doors: All single panel lab doors should be 3’-6” in width. Single lab doors, other than office doors for GS/PD offices, should never be 3’ in width, unless they are combined with an adjacent 12” or 18” inactive leaf. If an adjacent inactive leaf is used, a center door mullion should not be used. Both doors must be opened with a combined clear width to be open for equipment passage. The lab program pages indicate 3’-6” single doors for all lab rooms. View windows should be used for all lab and GS/PD doors unless the room function is a light sensitive context, such as a dark room.
- Daylight attenuation should be provided in all labs where exterior windows occur, such as the 3rd floor clerestory and the first floor. Daylight attenuation can be vertical or horizontal blinds. Complete blackout conditions may be required for instrument rooms (lasers)

and where these rooms occur, they should be located on walls that do not have exterior windows.

- Acoustic attenuation for all lab areas should provide a NC rating of 40 or less. GS/PD offices should be at 35 NC or less.
- Security will be provided at all doors by means of a card reader access.

STRUCTURAL:

- Vibration attenuation is provided by the existing structural system of the building.

MECHANICAL:

- The hours of operation for research labs and research lab support rooms are defined as 24 hours per day/365 days per year. Instructional labs and instructional lab support rooms are defined from 6 am to 11 pm, Monday through Saturday.
- All labs and lab support rooms will have 100% exhaust, with no recirculation of air. The GS/PD offices, because they are enclosed within a lab area, should also have 100% exhaust, to prevent possible reintrainment of contaminated lab air into the supply air stream.
- Fume hood exhaust is required by code to be on emergency power. Due to door pressure requirements, it will also be necessary to have a minimal amount of supply air on emergency power as well in order to prevent a situation where a door cannot be opened due to excessive pressure from having only lab exhaust in operation in an emergency situation.
- Air change rate shall be a minimum of 6 air changes per hour for any lab room. The air change rate may be higher due to equipment heat gain. To the extent that it is possible to define an unoccupied lab time frame, the air change rate may be reduced to 4 air changes per hour.
- Most labs will be defined with negative air pressure. Some specialized lab support functions may be designated as positive, such as a clean work room.
- Equipment heat gain for general research labs is estimated at 25 btuh/sf. Moderate equipment lab support rooms will have an estimated heat gain of 50 btuh/sf. High lab equipment support rooms will have an estimated heat gain of 75 btuh/sf.
- All fume hoods will be designated at variable air volume (VAV).

ELECTRICAL:

- All lab bench and equipment areas will be provided with 110v duplex and fourplex outlets.
- Equipment spaces within labs shall be provided with 208v 30amp 1phase outlets. All such outlets shall be on standby power.
- Wired and wireless data will be provided for all labs.

- Task lights below fixed wall cabinets will be provided to enhance the lab lighting. Task lights will be LED type, mounted to underside of fixed wall cabinets and hardwired. LED task lights at open, adjustable wall shelves will be mounted to underside of bottom shelf and daisy chained to each other with end lamp plugged into electrical outlet at bench.
- Light switches should be located at each lab entry door.

PLUMBING:

- Hot and cold water will be provided to all lab sinks. Vacuum breakers will be provided if a central back-flow prevention system is not provided.
- Pure water, Type II, will be provided at each lab.
- Tepid domestic water will be provided at each eyewash and safety shower.
- Floor drains should be provided below each safety shower.
- Hard connection drains shall be provided inside the wall cavity for all wall recessed eyewash stations.
- Natural gas, vacuum, and nitrogen gas will be provided as centrally piped systems.
- Specialty cylinder gases (argon, helium, CO2, hydrogen, and any others to be identified) will be provided by local cylinder stations in lab support rooms.

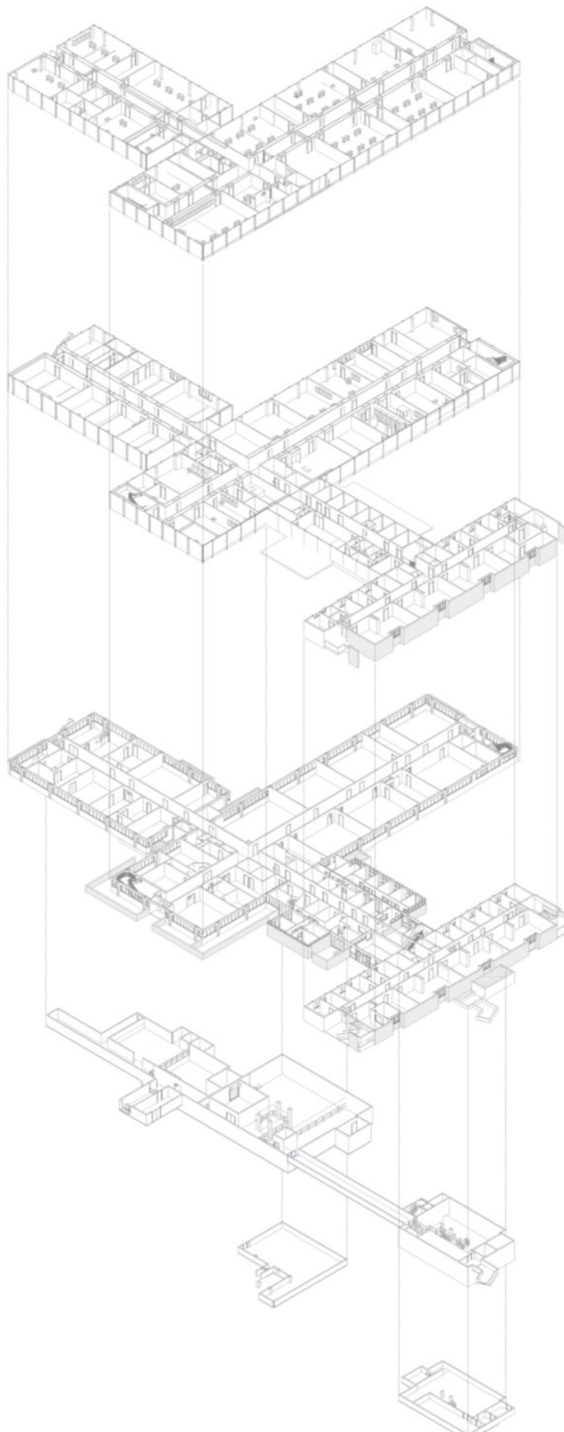
CONTRACTOR FURNISHED EQUIPMENT:

- Laboratory casework, consisting of base cabinets, wall cabinets, and tall cabinets will be provided by the construction contract.
- Lab tops, sinks, and fittings will be provided by the construction contract.
- Chemical fume hoods will be provided by the construction contract.
- Fire extinguishers will be provided by the construction contract.

OWNER (UC) FURNISHED EQUIPMENT:

- Chairs, scientific equipment (refrigerator, freezers, incubators, etc.), scientific instruments (microscopes, lasers, etc.), and flex lab bench systems will be provided by the Owner.

11.5 LAB RENOVATION SEQUENCE



LAB RENOVATION SEQUENCE

This scheme defines the extent of renovation for the first phase of Construction. All other areas would be renovated in the future as programs and budgets are defined.

Construction Phase 1

North Wing- All floors
- Level 3: Research Labs
- Level 2: Teaching Labs
- Level 1: Teaching Labs; New Classroom Addition

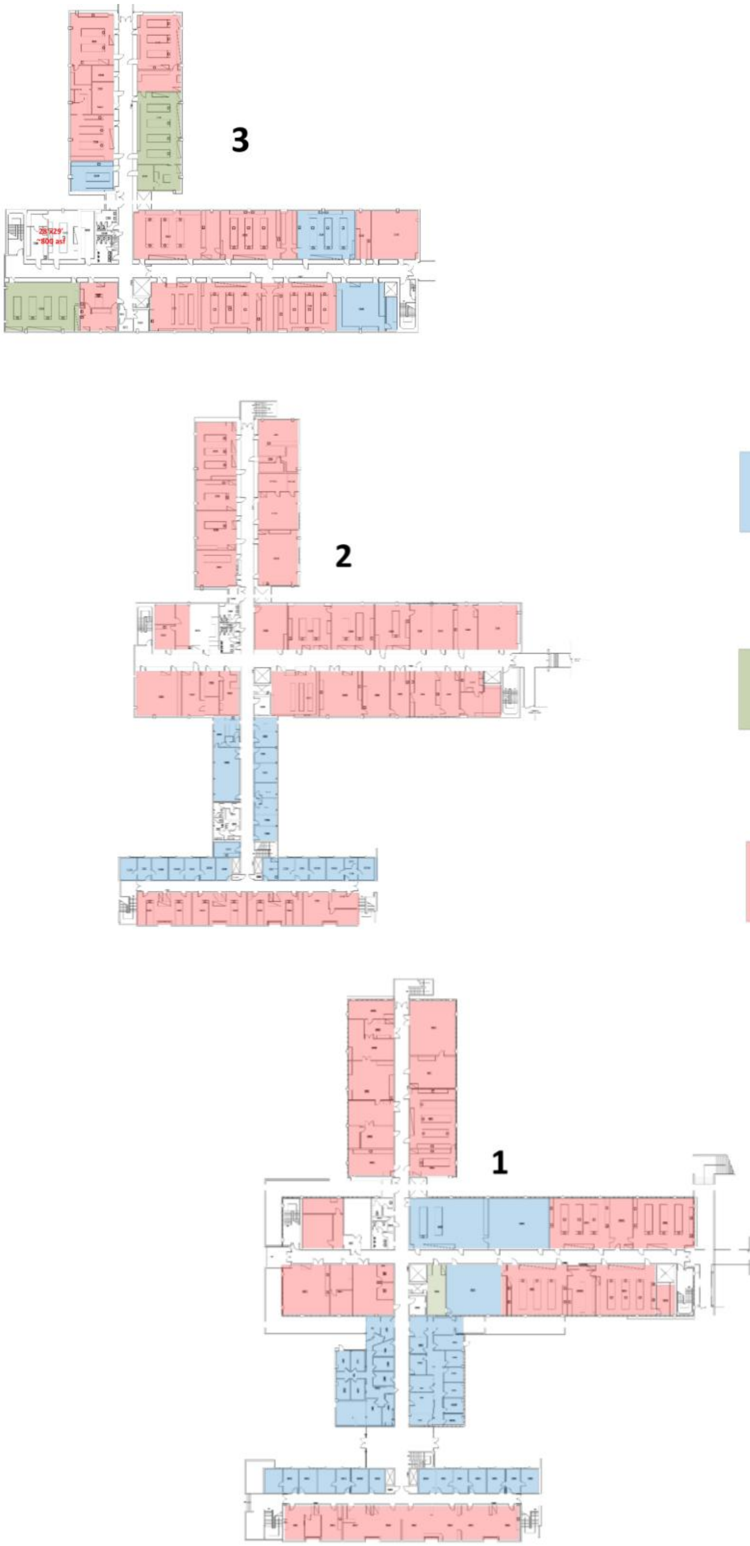
Center Wing- Toilet renovation all floors
- Level 1: Renovate Teaching Labs that have not been renovated in recent years

Construction Phase 2

All other areas as determined by future planning and funding

RL Research Labs and Lab Support
TL Teaching Labs and Lab Support
CR Classrooms
O Offices
T Toilets

11.6 LAB RENOVATION PRIORITY



LAB RENOVATION PRIORITY

This scheme was developed to inform the overall architectural design and planning. The RBB concept drawings supersede the laboratory planning concepts.

Baseline Renovation
MEP/ADA/Abatements

Moderate Renovation
Baseline plus as needed interior renovation

Full Renovation
Baseline plus full interior renovation

11.7 LAB RENOVATION PATTERN

LAB RENOVATION PATTERN

This scheme was developed to inform the overall architectural design and planning. The RBB concept drawings supersede the laboratory planning concepts.

TL2

15 teaching labs-
8 new in north wing
4 existing labs to be renovated in center wing
3 existing labs to remain
Two 8' chem hoods per lab
2 hoods x 15 labs = 30 teaching hoods
24 students per lab
360 section drawers per lab

TLS

Teaching lab support
Central chem store room- 1 fume hood
Central chem waste room
Instrument rooms

RL

Research lab module
Assume avg size of 11'x26'
Group in open labs with 3, 4, 5, and 6 modules per open lab
57 research lab modules
Medium density hood labs: Assume half (28.5) with 1 fume hood per 2 modules = 14 fume hoods, plus capacity to increase by 100% in future = 57 fume hoods

RL

Research lab- single module-
Total of 6 labs shown-
Assume avg size of 11'x26'
1 fume hood per module/lab= 6 fume hoods

Research lab support module
Assume avg size of 11'x26'
46 research lab support modules
Lab support ratio to lab = 1.0
Rooms for Instrument, Procedure, Env. Room, Dark work room, Clean work room, Equipment Room, Chem Store Room;
1 fume hood in Chem Store
5 fume hoods in Procedure Rooms

Total fume hoods: 100

100 hoods x 800 cfm/hood (avg) = 80,000 cfm total hood exhaust connected load
Assume 40% reduction for diversity factor
80,000 x .60 = 48,000 cfm total hood exhaust design load

O

Post Doc/Grad Student office module
6 desk stations per 11'x26' module

PI Offices and meeting rooms in south wing- Levels 1 and 2

T

Toilets- enlarge at each floor

FIRST FLOOR

RESEARCH LABS
1 OPEN LAB SUITE - RESEARCH

- 1 At 5 LAB MODULES- South Wing

RESEARCH LAB SUPPORT /LAB RATIO 5/5 = 1.0

INSTRUCTIONAL LABS

4 NEW INSTRUCTIONAL LABS- North Wing
4 LABS AT 4 MODULES EACH = 16 MODULES

4 RENOVATED INSTRUCTIONAL LABS- Center Wing
4 LABS AT 4 MODULES EACH = 16 MODULES

INSTRUCTIONAL LAB SUPPORT
11 MODULES

LAB RENOVATION PATTERN LEVEL 1

This scheme was developed to inform the overall architectural design and planning. The RBB concept drawings supersede the laboratory planning concepts.

SECOND FLOOR

RESEARCH LABS

4 OPEN LAB SUITES
- 1 At 6 LAB MODULES
- 2 At 5 LAB MODULES
- 1 At 3 LAB MODULES

19 RESEARCH LAB MODULES (OPEN LAB SUITE)

3 SINGLE MODULE RESEARCH LABS

19 RESEARCH LAB SUPPORT MODULES

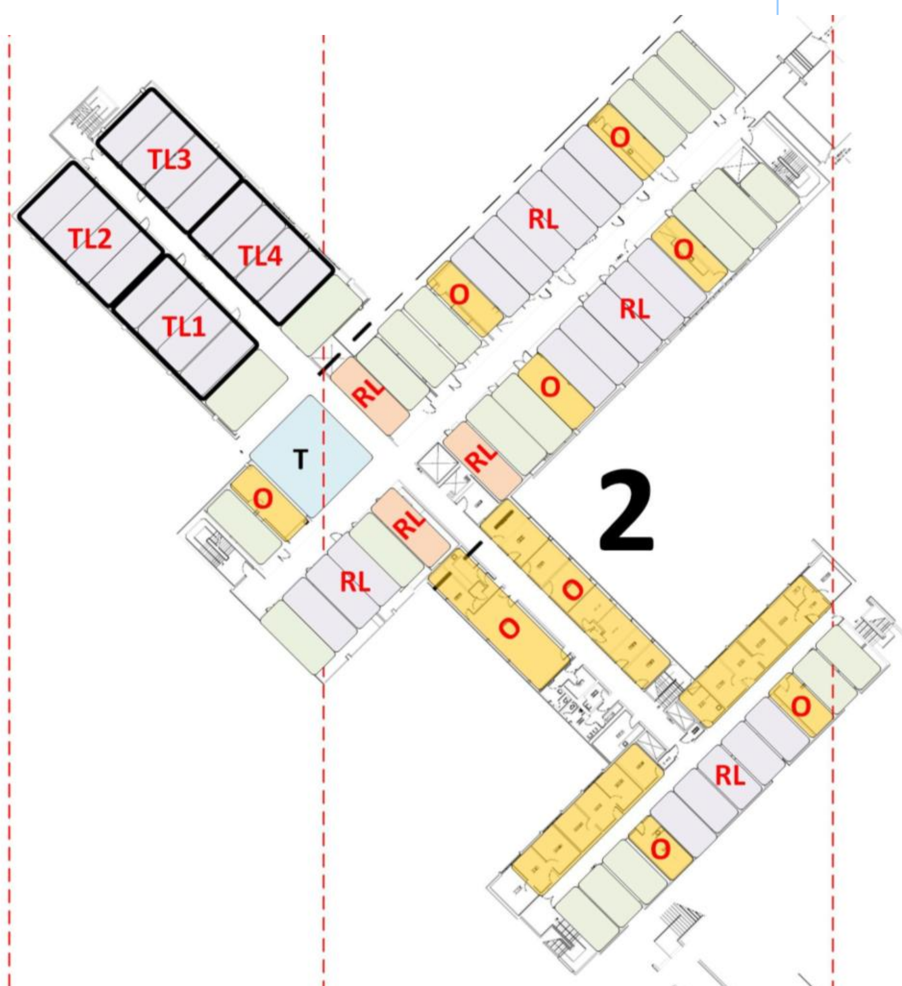
RESEARCH LAB SUPPORT /LAB RATIO 19/19 = 1.0

INSTRUCTIONAL LABS

4 NEW INSTRUCTIONAL LABS AT NORTH WING
2 TEACHING LAB SUPPORT MODULES

LAB RENOVATION PATTERN LEVEL 2

This scheme was developed to inform the overall architectural design and planning. The RBB concept drawings supersede the laboratory planning concepts.



THIRD FLOOR

RESEARCH LABS

5 OPEN LAB SUITES

- 1 At 6 LAB MODULES
- 1 At 5 LAB MODULES
- 2 At 4 LAB MODULES
- 1 At 3 LAB MODULES

22 RESEARCH LAB MODULES (OPEN LAB SUITE)

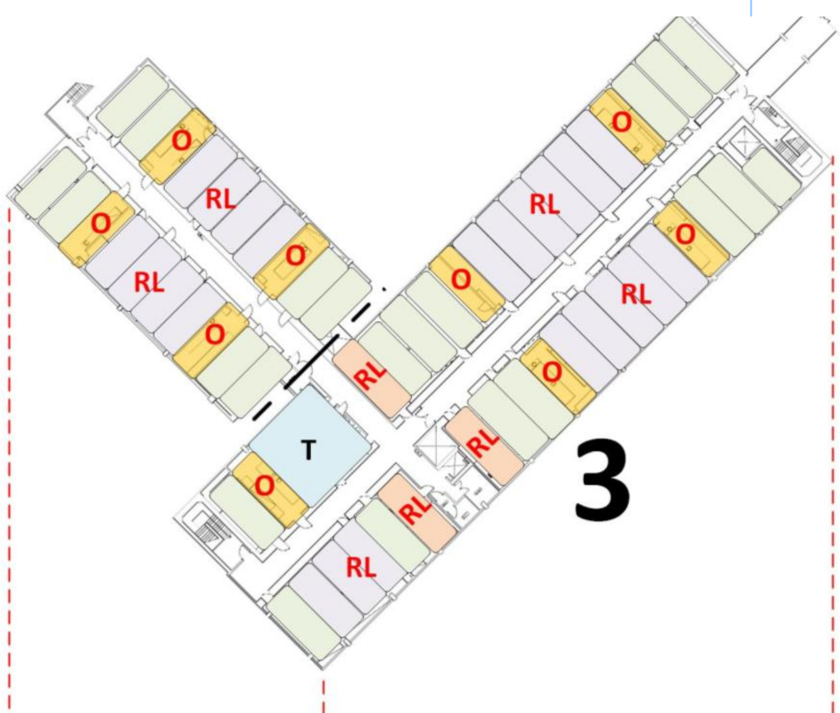
3 SINGLE MODULE RESEARCH LABS

22 RESEARCH LAB SUPPORT MODULES

RESEARCH LAB SUPPORT /LAB RATIO 22/22 = 1.0

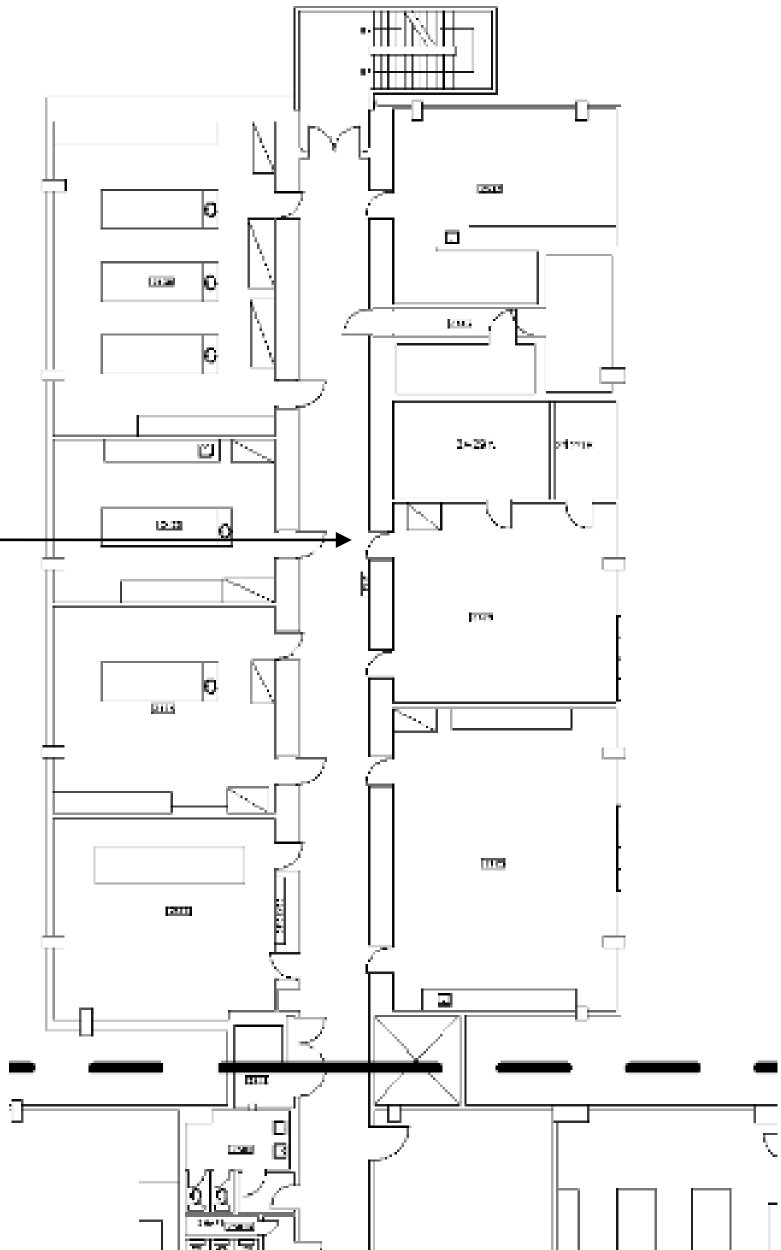
LAB RENOVATION PATTERN LEVEL 3

This scheme was developed to inform the overall architectural design and planning. The RBB concept drawings supersede the laboratory planning concepts.

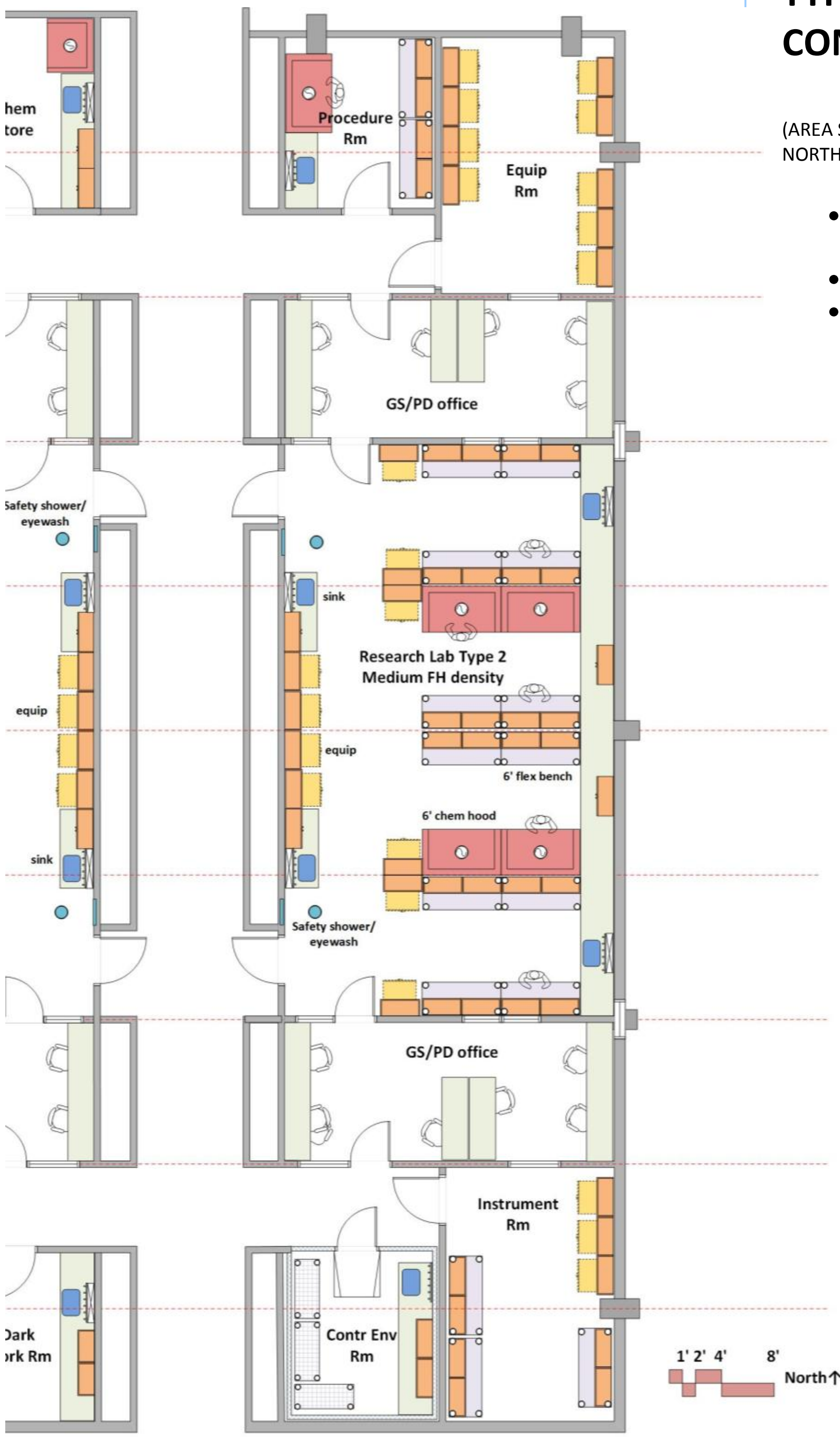


**EXISTING
NORTH WING
FLOOR PLAN**

EXISTING DOORS
AT CORRIDOR
REQUIRE
MODIFICATIONS
TO STRUCTURAL
CONCRETE
SHEAR WALLS
FOR ADA ACCESS
COMPLIANCE



11.8 TYPICAL LAB PATTERN CONCEPT



TYPICAL LAB PATTERN CONCEPT

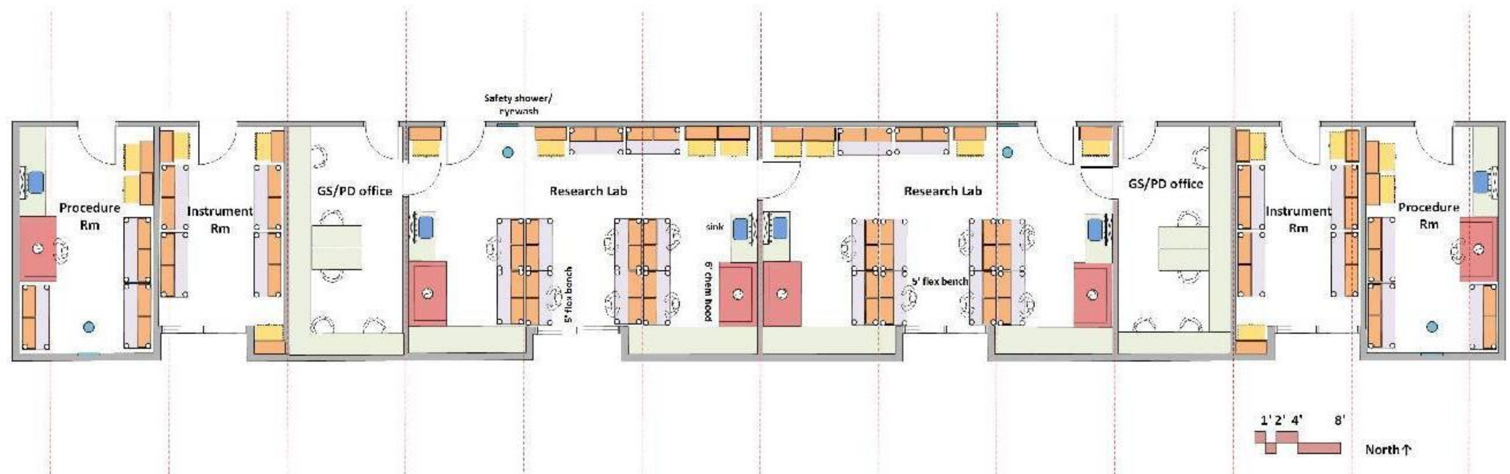
(AREA SHOWN IS PIERCE HALL, LEVEL 2, NORTH WING)

- 11' LAB PLANNING MODULE
- +/- 25' LAB DEPTH
- ALL LAB SUPPORT ROOMS ARE ACCESSED FROM CORRIDOR – IMPLIES ALL ARE SHARED FUNCTIONS

TYPICAL LAB PATTERN CONCEPT

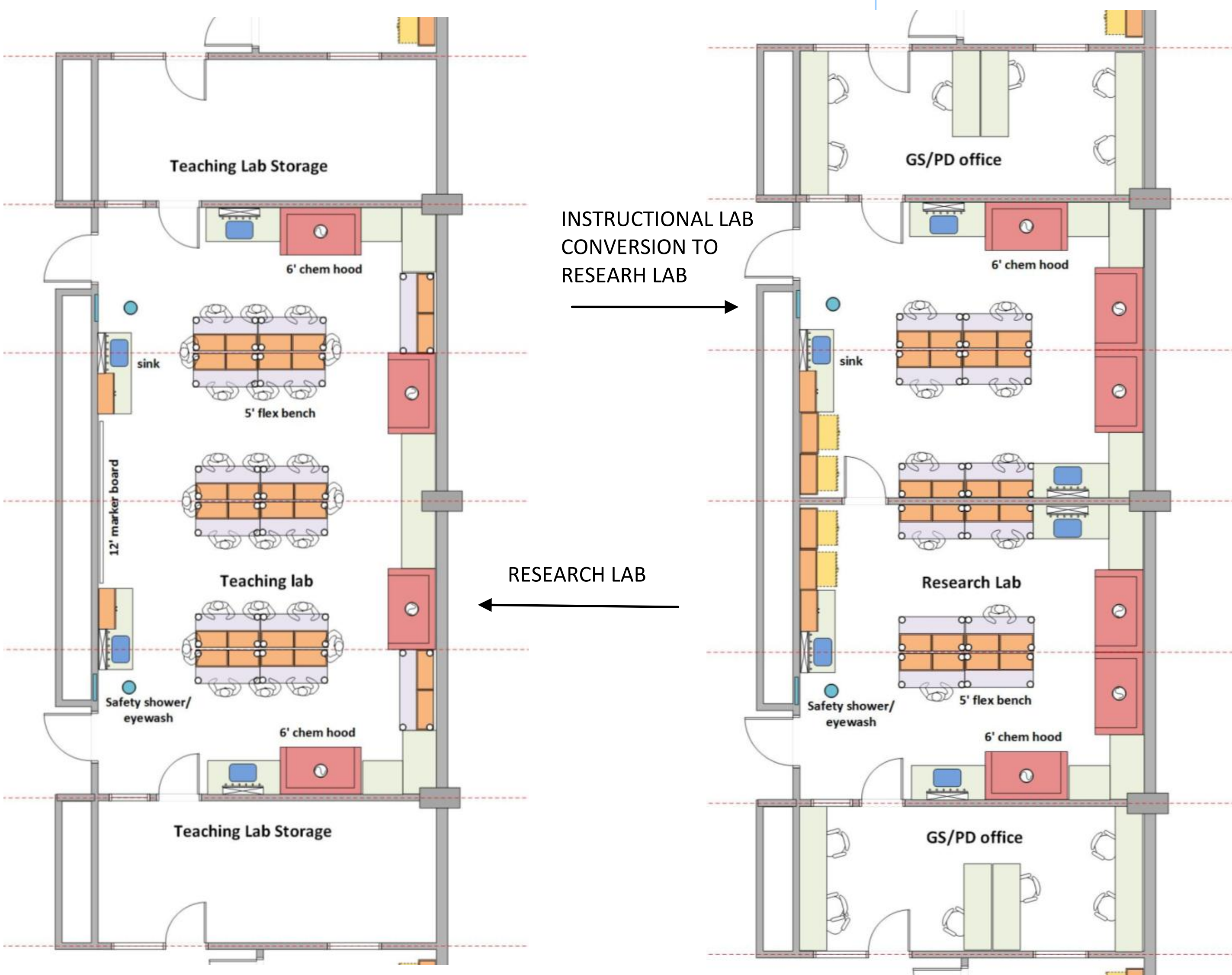
(AREA SHOWN IS PIERCE HALL, LEVEL 2, SOUTH WING)

- 11' LAB PLANNING MODULE
- +/- 20' LAB DEPTH
- ALL LAB SUPPORT ROOMS ARE ACCESSED FROM CORRIDOR – IMPLIES ALL ARE SHARED FUNCTIONS



11.9 INSTRUCTIONAL LAB CONVERSION TO RESEARH LAB

THIS CONCEPT ILLUSTRATES HOW LAB SPACE INITIALLY RENOVATED AS INSTRUCTIONAL LABS AS A TEMPORARY SOLUTION, CAN LATER BE CONVERTED TO RESEARCH LABS



11.10 LAB PROGRAM SUMMARY

LAB PROGRAM Entire Building

The following program provides the vision for the building; it follows a pattern language space program methodology as developed during the planning process.

Lab Program Summary- Entire Building				
Room Name	Room Quantity	Subtotal	Fume Hoods	notes
RESEARCH LABS				
Flex Type 1				Not used
Flex Type 2	16	14168 asf	50	Medium fume hood density Open lab suite 1 fume hood/2 modules Capacity to increase to ~1 fume hood/module Flex. Casework; sinks & hoods fixed
Flex Type 3 New Prototype	6	1914 asf	6	Single lab module research lab with fume hood
Research Lab Support	45	13640 asf	11	7 lab support types Instrument Room Proced. Rm (10 rms w/ 1 hood each) Equipment Room Controlled Environment Room Dark Work Room Clean Work Room Chem Store Room (1 fume hood)
PD/GS Offices	18	5434 asf		Locate adjacent to open lab suite
TEACHING LABS				
Teaching Lab Type 1	13	15752 asf	32	General Chemistry 24 students/lab 2 eight foot fume hoods/lab 360 section drawers/lab
Teaching Lab Type 2	2	2376 asf	0	Earth Science 28 students/lab
Teaching Lab Support	10	4576 asf	1	Chem Stock Room (1 fume hood) Chem Waste Room Instrument Rooms Earth Science Store Rooms
OFFICES & MEETING ROOMS				
PI Offices	18	2178 asf		Locate in south wing
Office Support Room	4	484 asf		Locate in south wing
Small Meeting Room	4	484 asf		Locate in south wing
Conference Room	2	726 asf		Locate in south wing
Misc. Offices		3881 asf		Not included in renovation
Totals	**110**	**65613 asf**	**100**	**fume hood maximum capacity**

LAB PROGRAM
North Wing
Level 3

Lab Program North Wing- Level 3: Research Labs

Room Name	Room Qty.	Average Module	Area		Module Quantity		Subtotal	Fume Hoods	notes
RESEARCH LABS									
Flex Type 1									Not used
Flex Type 2	2	~11' x 25'	267 asf	x	8	=	2139 nsf	8	Medium fume hood density Open lab suite ~1 fume hood/2 modules Capacity to increase to ~1 fume hood/module Flexible casework system- only sinks and hoods fixed
Flex Type 3 New Prototype	1	~11' x 24'	264 asf	x	1	=	264 asf	1	Single lab module research lab w/ fume hood
Research Lab Support	7	~11' x 24'	264 asf	x	7	=	1848 asf	2	7 lab support types Instrument Room Procedure Rm (assume 4 rms w/ 1 hood ea.) Equipment Room Controlled Environment Room Dark Work Room Clean Work Room Chem Store Room (1 fume hood)
PD/GS Offices	4	~11' x 25'	275 asf	x	4	=	1100 asf		locate adjacent to open lab suite
TEACHING LABS									none
Totals	14						5351 asf	11	fume hoods

LAB PROGRAM
North Wing
Level 2

Lab Program North Wing- Level 2: Teaching Labs

Room Name	Rm. Qty.	Average Module	Area		Module Qty.		Subtotal	Hoods	notes
RESEARCH LABS									**None**
TEACHING LABS									
Teaching Lab Type 1	**2**	~11 'x 27'	297 asf	x	8	=	2376 asf	4	General Chemistry 24 students/lab 2 eight foot fume hoods/lab 360 section drawers/lab
Teaching Lab Type 2	**2**	~11 'x 27'	297 asf	x	8	=	2376 asf	0	Earth Science 28 students/lab
Teaching Lab Support	**2**	~11 'x 26'	277 asf	x	2	=	554 asf	0	 Instrument Rooms Earth Science Store Rooms
Totals	**6**						**5306 asf**	**4**	**fume hoods**

LAB PROGRAM North Wing Level 1

Lab Program North Wing- Level 1: Teaching Labs

Room Name	Qty. Room	Average Module	Area		Module Quantity		Subtotal	Fume Hoods	notes
RESEARCH LABS									None
TEACHING LABS									
Teaching Lab Type 1	4	~11 'x 27'	305 asf	x	16	=	4880 asf	8	General Chemistry 24 students/lab 2 eight foot fume hoods/lab 360 section drawers/lab
Teaching Lab Support	2	~11 'x 27'	305 asf	x	2	=	609 asf	0	Instrument Rooms Earth Science Store Rooms
Totals	**6**						**5490 asf**	**8**	**fume hoods**

LAB PROGRAM
Center Wing
Level 3

Center Wing- Level 3: Research Labs

Room Name	Qty. Room	Average Module	Area		Module Quantity		Subtotal	Fume Hoods	notes
RESEARCH LABS									
Flex Type 1									Not used
Flex Type 2	5	~11' x 29'	323 asf	x	14	=	4526.8 nsf	14	Medium fume hood density Open lab suite 1 fume hood/2 modules Capacity to increase to ~1 fume hood/module Flexible casework system- only sinks and hoods fixed
Flex Type 3 **New Prototype**	3	~11' x 29'	319 asf	x	3	=	957 asf	3	Single lab module research lab w/ fume hood
Research Lab Support	14	~11' x 29'	319 asf	x	14	=	4466 asf	4	7 lab support types Instrument Room Procedure Rm (assume 3 rms w/ 1-6 ft fume hood ea.) Equipment Room Controlled Environment Room Dark Work Room Clean Work Room Chem Store Room (1 fume hood)
PD/GS Offices	5	~11' x 29'	319 asf	x	5	=	1595 asf		locate adjacent to open lab suite
TEACHING LABS									**None**
Totals	**27**						**11545 asf**	**21**	**fume hoods**

LAB PROGRAM
Center Wing
Level 2

Center Wing- Level 2: Research Labs

Room Name	Room Quantity	erage Module	Area		Module Quantity		Subtotal	Fume Hoods	notes
RESEARCH LABS									
Flex Type 1									Not used
Flex Type 2	5	~11' x 29'	323 asf	x	14	=	4527.6 nsf	14	Medium fume hood density Open lab suite 1 fume hood/2 modules Capacity to increase to ~1 fume hood/module Flexible casework system- only sinks and hoods fixed
Flex Type 3 **New Prototype**	3	~11' x 29'	319 asf	x	3	=	957 asf	3	Single lab module research lab w/ fume hood
Research Lab Support	14	~11' x 29'	319 asf	x	14	=	4466 asf	4	7 lab support types Instrument Room Procedure Rm (assume 3 rms w/ 1-6 ft fume hood ea.) Equipment Room Controlled Environment Room Dark Work Room Clean Work Room Chem Store Room (1 fume hood)
PD/GS Offices	5	~11' x 29'	319 asf	x	5	=	1595 asf		locate adjacent to open lab suite
TEACHING LABS									**None**
Totals	**27**						**11546 asf**	**21**	**fume hoods**

LAB PROGRAM
Center Wing
Level 1

Center Wing- Level 1: Teaching Labs

Room Name	Room Quantity	erage Module	Area		Module Quantity		Subtotal	Fume Hoods	notes
RESEARCH LABS									**None**
TEACHING LABS									
Teaching Lab Type 1	**7**	~11 'x 28'	306 asf	x	28	=	8574.4 asf	14	General Chemistry
									Existing labs to remain
									2 eight foot fume hoods/lab
Teaching Lab Support	**6**	~11 'x 28'	306 asf	x	11	=	3363.8 asf	2	
									Chem Stock Room
									Chem Waste Room
									Instrument Rooms
Totals	**13**						**11938 asf**	**16**	**fume hoods**

LAB PROGRAM
South Wing
Level 2

South Wing- Level 2: Research Labs

Room Name	Room Quantity	Average Module	Area		Module Quantity		Subtotal	Fume Hoods	notes
RESEARCH LABS									
Flex Type 1									Not used
Flex Type 2	**2**	11' x 26'	286 asf	x	5	=	1430 nsf	4	Medium fume hood density Open lab suite 1 fume hood/2 modules Capacity to increase to ~1 fume hood/module Flexible casework system- only sinks and hoods fixed
Research Lab Support	**5**	11' x 26'	286 asf	x	5	=	1430 asf	1	lab support types Instrument Room Procedure Rm (assume 1 rm w/ 1 hood ea) Equipment Room Controlled Environment Room Clean Work Room
PD/GS Offices	**2**	11' x 26'	286 asf	x	2	=	572 asf		locate adjacent to open lab suite
TEACHING LABS									**None**
OFFICES & MEETING ROOMS									
PI Office	**9**	11' x 11'	121 asf	x	9	=	1089 asf		
Office Support	**2**	11' x 11'	121 asf	x	2	=	242 asf		
Small Meeting	**2**	11' x 11'	121 asf	x	2	=	242 asf		
Conference Room	**1**	22' x 22'	484 asf	x	1	=	484 asf		
Misc offices							**1296 asf**		not included in renovation
Totals	**23**						**6785 asf**	**5**	**fume hoods**

LAB PROGRAM
South Wing
Level 1

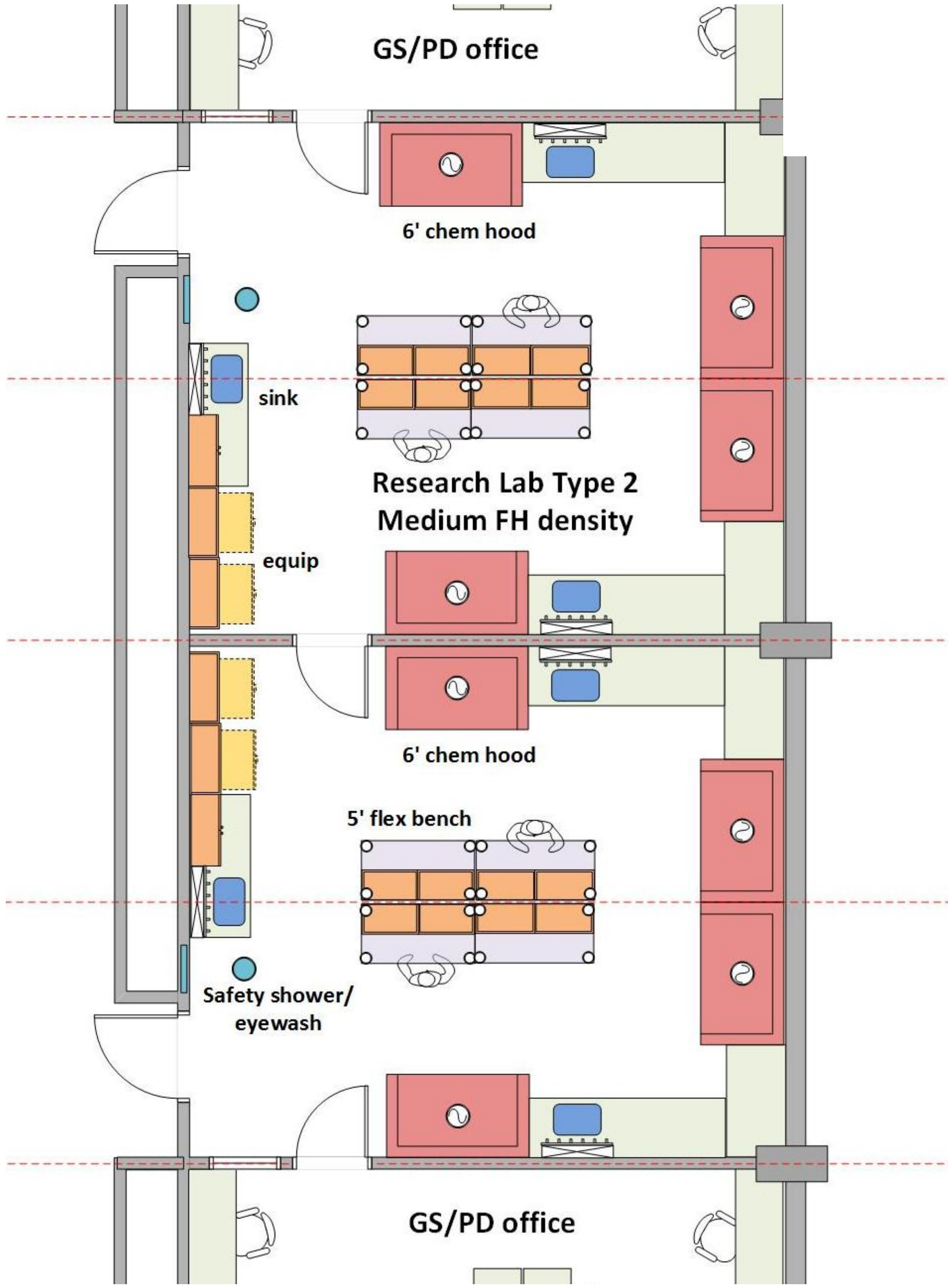
South Wing- Level 1: Research Labs

Room Name	Room Quantity	Average Module	Area		Module Quantity		Subtotal	Fume Hoods	notes
RESEARCH LABS									
Flex Type 1									Not used
Flex Type 2	**2**	11' x 26'	286 asf	x	5	=	1430 nsf	4	Medium fume hood density Open lab suite 1 fume hood/2 modules Capacity to increase to ~1 fume hood/module Flexible casework system- only sinks and hoods fixed
Research Lab Support	5	11' x 26'	286 asf	x	5	=	1430 asf	1	lab support types Instrument Room Procedure Room (assume 1 room with 1 hood each) Equipment Room Controlled Environment Room Clean Work Room
PD/GS Offices	**2**	11' x 26'	286 asf	x	2	=	572 asf		locate adjacent to open lab suite
TEACHING LABS									**None**
OFFICES & MEETING ROOMS									
PI Office	**9**	11' x 11'	121 asf	x	9	=	1089 asf		
Office Support	**2**	11' x 11'	121 asf	x	2	=	242 asf		
Small Meeting	**2**	11' x 11'	121 asf	x	2	=	242 asf		
Conference Room	**1**	11' x 22'	242 asf	x	1	=	242 asf		
Misc offices							**2777** asf		not included in renovation
Totals	**23**						**8024 asf**	**5**	**fume hoods**

11.11 ROOM DATA SHEETS

Category	Sub-Category	Notes
General		
	Name	**Flex Type 2 Research Lab**
	Function	Medium Hood Density Flex Lab
	Occupancy	B
	Area (Assignable)	Varies
	No. of Occupants	1 PI/2 post docs/4 grad students per research lab unit
	Adjacencies	Research Labs & GS/PD Offices
	Accessibility	As required by code
	Hours of Use	24/7/365
Architectural		
	Ceiling	9' cloud / open to structure
	Ceiling Height	9'- 0"
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl
	Base	Integral Cove
	Windows	Insulated glass
	Door Finish & Size	3'- 6"x 8'- 0" Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 40 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)208v power at equipment spaces; Stand-by power for equipment
	Lighting	Indirect LED @ 600 LUX; Task lights below wall cabinets with individual controls; Provide light switches at door
	Voice and Data	One Voice, 3Data per 100 SF
	Mechanical	Temperature – 66-74 deg F +/-; Pressure-negative; Humidity- Ambient; (8) air changes per hour min.; occupied (air change rate may be higher due to equip. Heat gain); (4) air changes per hour unoccupied
	Equip. Heat Gain	25 Btuh/sf; 800 c.f.m. exhaust at each fume hood (VAV)
	Plumbing	Hot/Cold water (HW/CW) at sinks with vacuum breakers; Natural gas and vacuum; Nitrogen gas; Local cylinder gases; Pure water at sinks and cupsinks; Domestic water and drain at safety shower/eyewash
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage & 1 pathway for fiber cable to the IDF data
Laboratory		
	Hoods	Chemical Fumehoods; Emergency power
	Casework	Wood or metal casework - base cabinets, wall cabinets, tall cabinets; Epoxy resin tops and sinks; Faucets & fittings; Chemical fume hoods
	Emergency	Eye wash, safety shower, fire extinguisher
	Equipment	Vibration Sensitive, Light Sensitive, Vibration Producing, Heat Producing, Noise Producing
Furniture / Equip	Fixed	
	Moveable	OFOI - Chairs; Benchtop analytical instruments
	Audio/Visual	

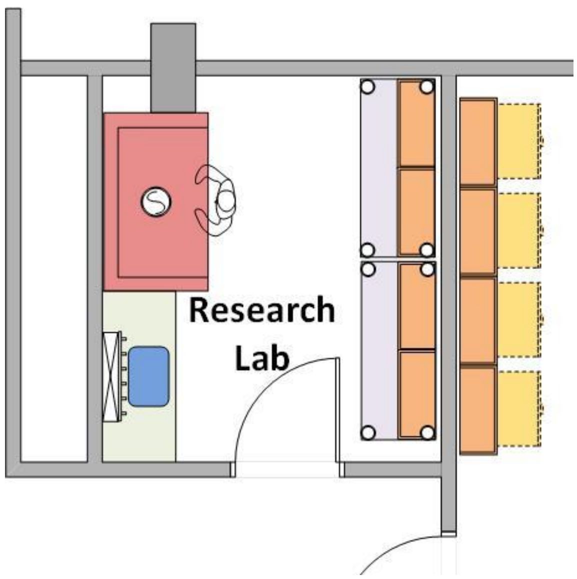
FLEX TYPE 2 RESEARCH LAB



Category	Sub-Category	Notes
General		
	Name	**Flex Type 3 Research Lab**
	Function	Single Module Research Lab
	Occupancy	B
	Area (Assignable)	Varies
	No. of Occupants	1
	Adjacencies	Research Labs & GS/PD Offices
	Accessibility	
	Hours of Use	24/7/365
	Additional Notes	
Architectural		
	Ceiling	9' cloud / open to structure
	Ceiling Height	9'- 0"
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl
	Base	Integral Cove
	Windows	Insulated glass
	Door Finish & Size	3'- 6"x 8'- 0" Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 40 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit) 208v power at equipment spaces; Stand-by power for equipment
	Lighting	Indirect LED @ 600 LUX; Task lights below wall cabinets with individual controls; Provide light switches at door
	Voice and Data	One Voice, 2 Data per Research station
	Mechanical	Temperature – 66-74 deg F +/-; 100% Exhaust, no recirculation; Pressure-negative; Humidity-Ambient; (8) air changes per hour min.; occupied (air change rate may be higher due to equip. Heat gain); (4) air changes per hour unoccupied
	Equip. Heat Gain	25 Btuh/sf; 800 c.f.m. exhaust at each fume hood (VAV)
	Plumbing	Hot/Cold water (HW/CW) at sinks with vacuum breakers; Natural gas and vacuum; Nitrogen gas; Local cylinder gases; Pure water at sinks and cup sinks; Domestic water and drain at safety shower/eyewash
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage & 1 pathway for fiber cable to the IDF
Laboratory		
	Hoods	Chemical Fumehood; Emergency power;
	Casework	Wood (bamboo) or metal casework - base cabinets, wall cabinets, tall cabinets; Epoxy resin tops and sinks; Faucets & fittings; Chemical fume hoods
	Emergency	Eye wash, safety shower, fire extinguisher
	Equipment	Refrigerator and Freezers
Furniture / Equip	Fixed	
	Moveable	OFOI - Chairs; Benchtop analytical instruments
	Audio/Visual	

FLEX TYPE 3
RESEARCH LAB

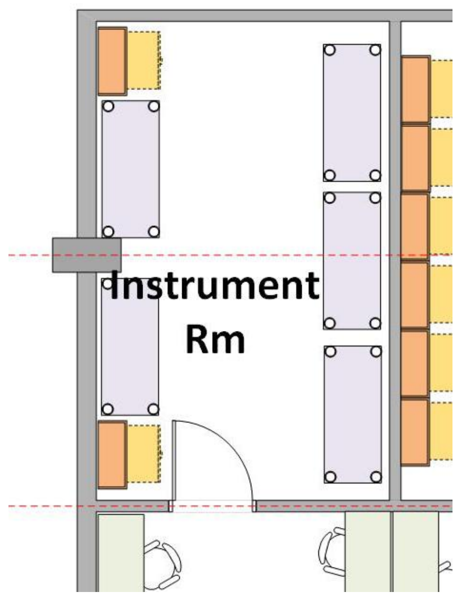
SINGLE MODULE



Category	Sub-Category	Notes
General		
	Name	**Instrument Room**
	Function	Research Lab Support
	Occupancy	B
	Area (Assignable)	Varies
	No. of Occupants	1 - 2
	Adjacencies	Research Lab
	Accessibility	
	Hours of Use	24/7/365
	Additional Notes	
Architectural		
	Ceiling	Acoustic Tile
	Ceiling Height	9'- 0"
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl
	Base	Integral Cove
	Windows	Insulated glass
	Door Finish & Size	3'- 6"x 8'- 0" Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 40 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)208v power at equipment spaces; Stand-by power for equipment
	Lighting	Indirect LED @ 600 LUX; Task lights below wall cabinets with individual controls; Provide light switches at door
	Voice and Data	One Voice,2 Data per Research station, additional data as required for equipment.
	Mechanical	Temperature – 66-74 deg F +/-; 100% Exhaust, no recirculation; Pressure- positive or negative (depending on use); Humidity- Ambient (6) air changes per hour min.; occupied (air change rate may be higher due to equip. Heat gain); (4) air changes per hour unoccupied
	Equip. Heat Gain	25 Btuh/sf; 800 c.f.m. exhaust at each fume hood (VAV)
	Plumbing	Natural gas and vacuum; Nitrogen gas; Local cylinder gases;
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
Laboratory		
	Hoods	Chemical Fume hood; Emergency power;
	Casework	Mobile Lab Benches
	Emergency	Eye wash, safety shower, fire extinguisher
	Equipment	Refrigerator and Freezers
Furniture / Equip		
	Fixed	
	Moveable	Chairs; Benchtop analytical instruments
	Audio/Visual	
	Additional Notes	

INSTRUMENT ROOM

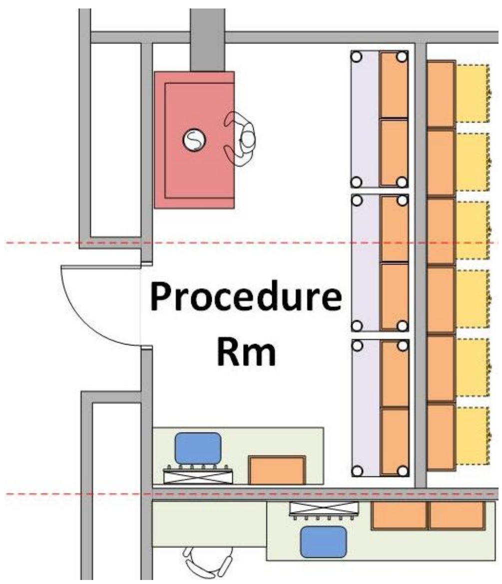
RESEARCH LAB SUPPORT



Category	Sub-Category	Notes
General		
	Name	**Procedure Room**
	Function	Research Lab Support (Perchloric Acid HF; Aqua Regia)
	Occupancy	B
	Area (Assignable)	Varies
	No. of Occupants	1 - 2
	Adjacencies	Support Labs
	Accessibility	
	Hours of Use	24/7/365
	Additional Notes	
Architectural		
	Ceiling	9' cloud / open to structure
	Ceiling Height	9'- 0"
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl
	Base	Integral Cove
	Windows	Insulated glass
	Door Finish & Size	3'- 6"x 8'- 0" Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 40 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)208v power at equipment spaces; Stand-by power for equipment
	Lighting	Indirect LED @ 600 LUX; Task lights below wall cabinets with individual controls; light switches at door
	Voice and Data	One Voice near the door, additional data as required for equipment
	Mechanical	Temperature – 66-74 deg F +/-; 100% Exhaust, no recirculation: Pressure-negative; Humidity- Ambient; (6) air changes per hour occupied (air change rate may be higher due to equipment heat gain) (4) air changes per hour unoccupied
	Equip. Heat Gain	25 Btuh/sf; 800 c.f.m. exhaust at each fume hood (VAV)
	Plumbing	Hot/Cold water (HW/CW) at sinks with vacuum breakers; Natural gas and vacuum; Nitrogen gas; Pure water at sinks and cupsinks; Domestic water and drain at safety shower/eyewash
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
Laboratory		
	Hoods	Chemical Fumehood; Emergency power
	Casework	Wood (bamboo) or metal casework - base cabinets, wall cabinets, tall cabinets; Epoxy resin tops and sinks; Faucets & fittings; Chemical fume hoods
	Emergency	Eye wash, safety shower, fire extinguisher
	Equipment	Refrigerator and Freezers
Furniture / Equip		
	Fixed	
	Moveable	Chairs; Benchtop analytical instruments
	Audio/Visual	
	Additional Notes	

PROCEDURE ROOM

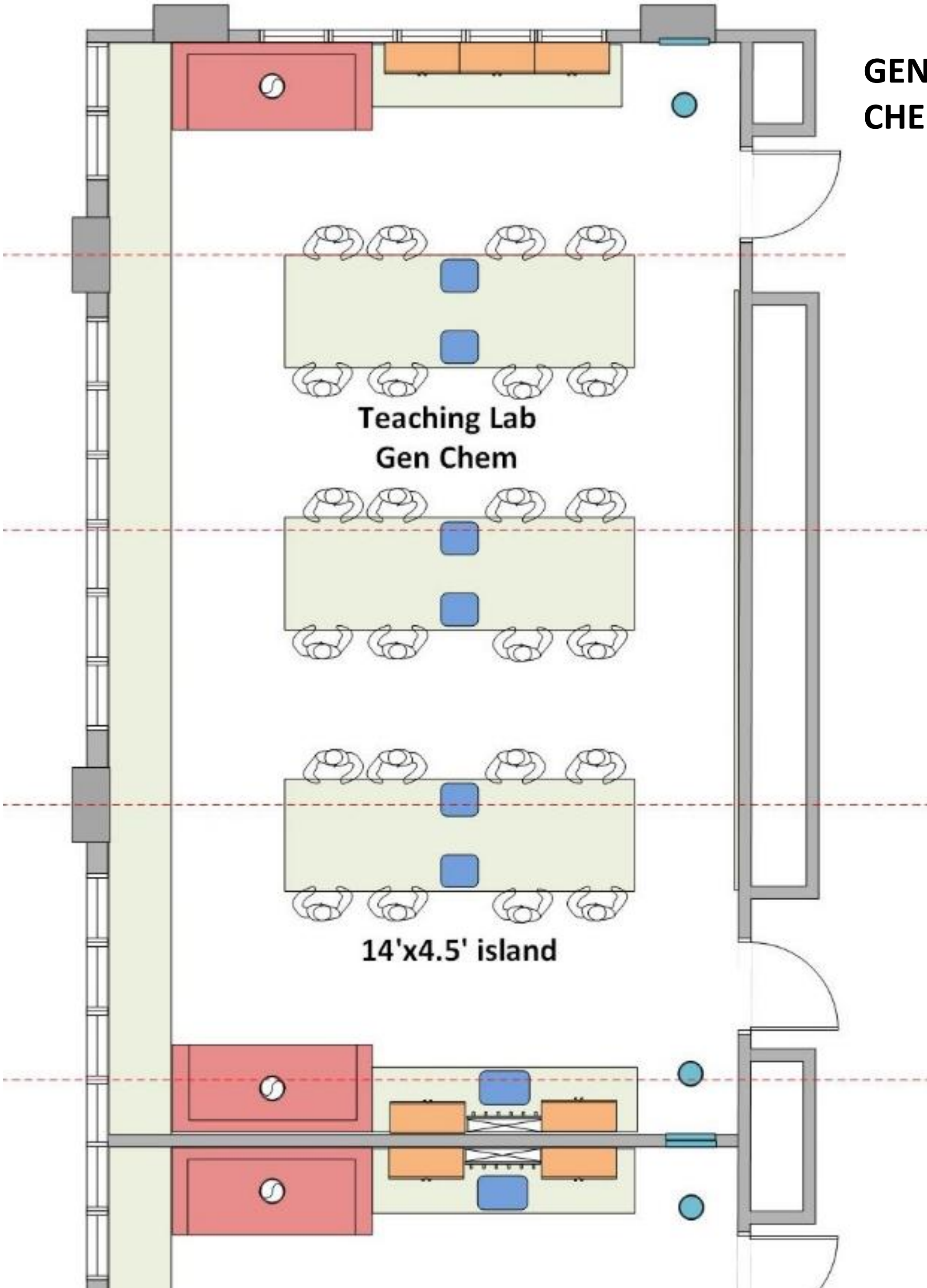
RESEARCH LAB SUPPORT



Category	Sub-Category	Notes
General		
	Name	**Instructional Lab Type 1**
	Function	General Chemistry
	Occupancy	B
	Area (Assignable)	Varies
	No. of Occupants	1 instructor/24 students
	Adjacencies	Support Labs
	Accessibility	
	Hours of Use	6am - 11pm
	Additional Notes	
Architectural		
	Ceiling	9’ cloud / open to structure
	Ceiling Height	9’- 0”
	Wall Base	
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl
	Base	Integral Cove
	Windows	Insulated glass
	Door Finish & Size	3’- 6”x 8’- 0” Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 40 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)208v power at equip spaces; Stand-by power for equipment; Task lights below wall cabinet
	Lighting	Indirect LED @ 600 LUX; Task lights below wall cabinets with individual controls; Light switches at door
	Voice and Data	1 Voice, 4 Data per desk
	Mechanical	Temperature – 66-74 deg F +/-; 100% Exhaust, no recirculation; Pressure-negative to corridor; Humidity- Ambient (6) air changes per hour min.; occupied (air change rate may be higher due to equip. Heat gain); (4) air changes per hour unoccupied
	Equip. Heat Gain	25 Btuh/SF; 1200 c.f.m. exhaust at each fume hood (VAV)
	Plumbing	Hot/Cold water (HW/CW) at sinks with vacuum breakers; Natural gas and vacuum; Pure water at sinks and cupsinks; Domestic water and drain at safety shower/eyewash
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
Laboratory		
	Hoods	Chemical Fumehood; Emergency power;
	Casework	Wood or metal casework - base cabinets, wall cabinets, tall cabinets; Epoxy resin tops and sinks; Faucets & fittings; Chemical fume hoods
	Emergency	Eye wash, safety shower, fire extinguisher
	Equipment	
Furniture / Equip		
	Fixed	Projection Screens / camera mount; Markerboards
	Moveable	OFOI - Chairs; Benchtop analytical instruments; carts mobile
	Audio/Visual	OFOI - Projection system

INSTRUCTIONAL LAB TYPE 1

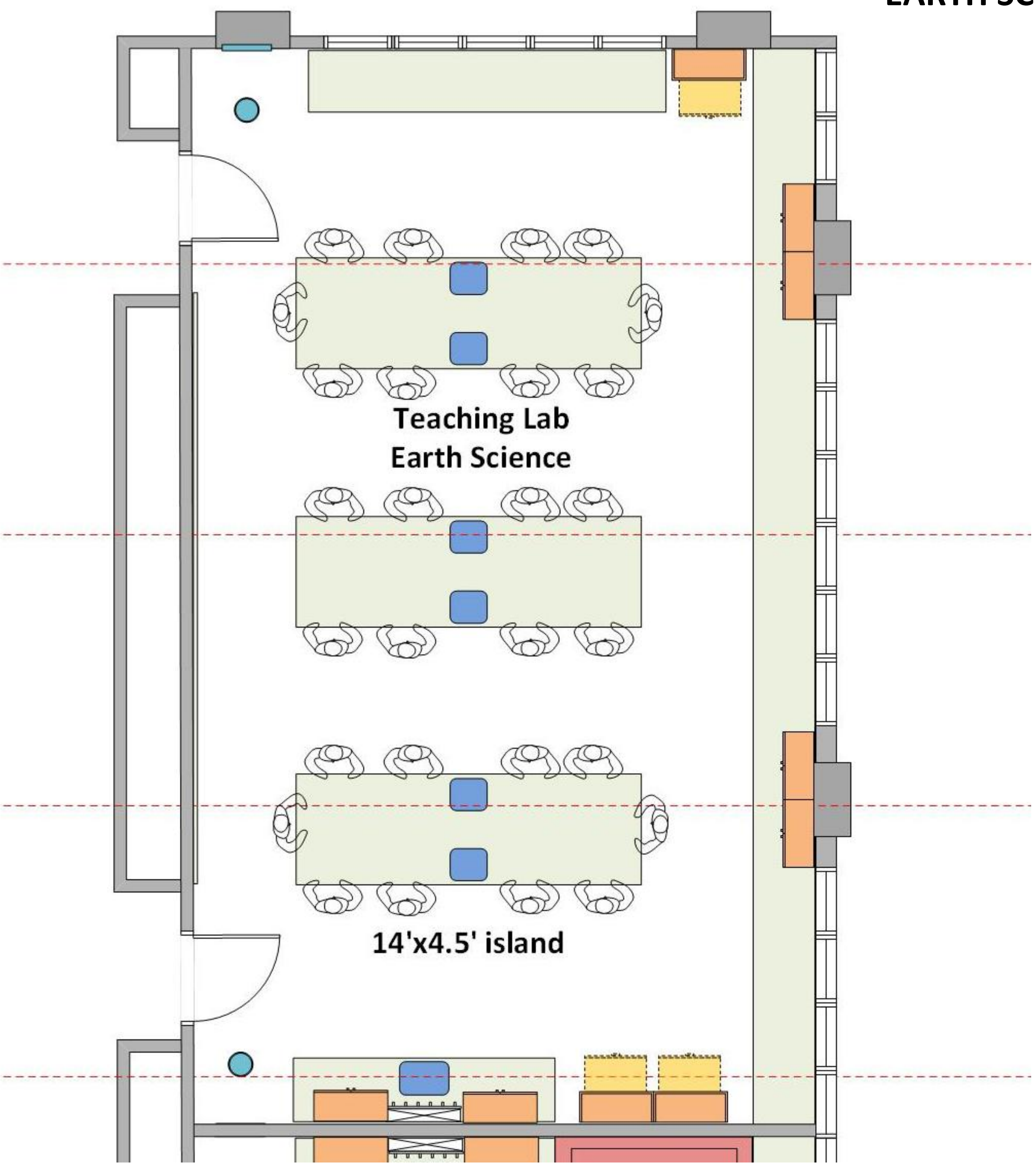
GENERAL CHEMISTRY



Category	Sub-Category	Notes
General		
	Name	**Instructional Lab Type 2**
	Function	Earth Science
	Occupancy	B
	Area (Assignable)	Varies
	No. of Occupants	1 instructor/28 students
	Adjacencies	Support Labs
	Accessibility	
	Hours of Use	6am - 11pm
	Additional Notes	
Architectural		
	Ceiling	9' cloud / open to structure
	Ceiling Height	9'- 0"
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl
	Base	Integral Cove
	Windows	Insulated glass
	Door Finish & Size	3'- 6"x 8'- 0" Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 40 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)208v power at equipment spaces; Stand-by power for equipment
	Lighting	Indirect LED @ 600 LUX; Task lights below wall cabinets with individual controls; light switches at door
	Voice and Data	1 Voice, 4 Data per 100 SF
	Mechanical	Temperature – 66-74 deg F +/-; 100% Exhaust, no recirculation; Pressure-negative to corridor; Humidity- Ambient; (6) air changes per hour min.; occupied (air change rate may be higher due to equip. Heat gain); (4) air changes per hour unoccupied
	Equip. Heat Gain	25 Btuh/SF
	Plumbing	Hot/Cold water (HW/CW) at sinks with vacuum breakers; Pure water at sinks and cupsinks; Domestic water and drain at safety shower/eyewash
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage & 1 pathway for fiber cable to the IDF
Laboratory		
	Hoods	
	Casework	Wood or metal casework - base cabinets, wall cabinets, tall cabinets; Epoxy resin tops and sinks; Faucets & fittings
	Emergency	Eye wash, safety shower, fire extinguisher
	Equipment	
Furniture / Equip		
	Fixed	Projection Screens / camera mount; Markerboards
	Moveable	OFOI - Chairs; Benchtop analytical instruments; carts mobile
	Audio/Visual	OFOI - Projection system

INSTRUCTIONAL LAB TYPE 2

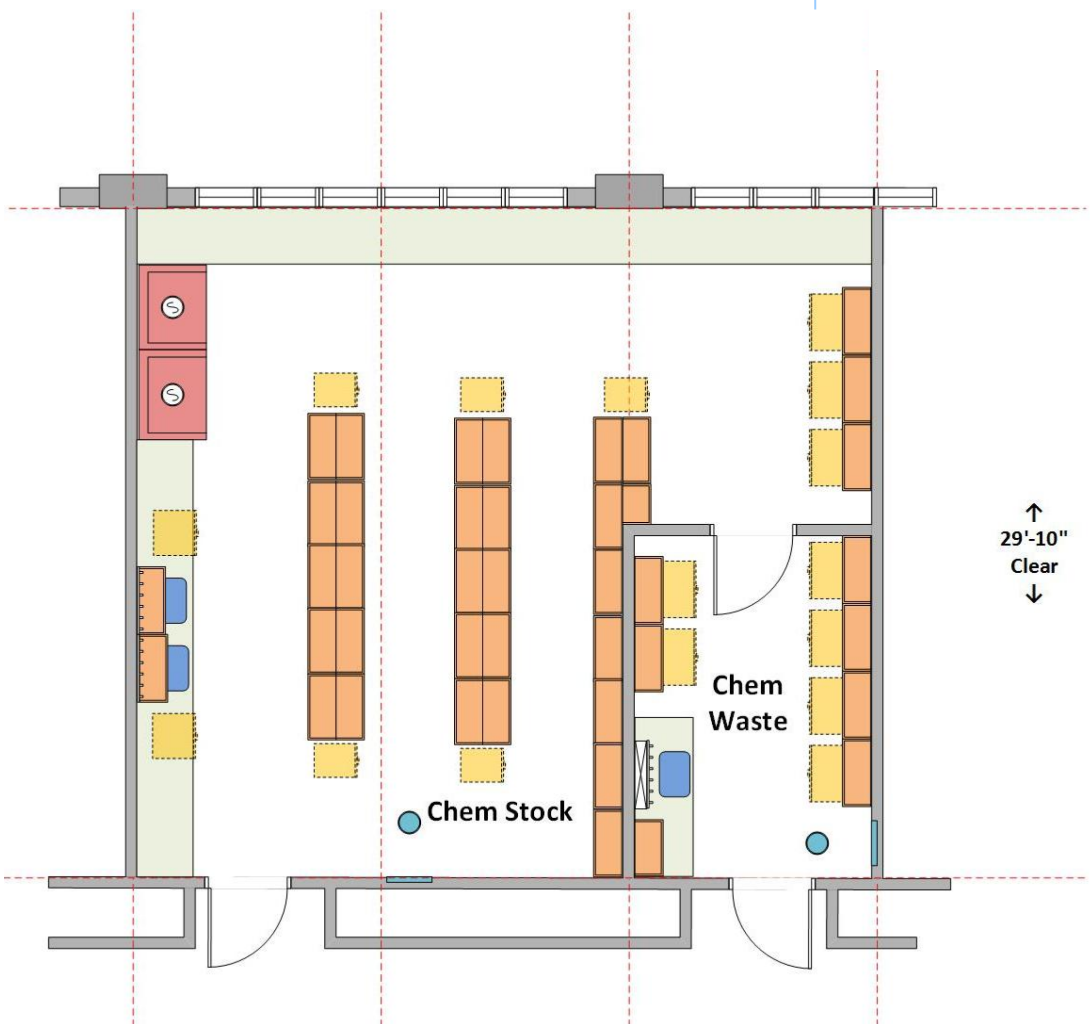
EARTH SCIENCE



Category	Sub-Category	Notes
General		
	Name	**Chemistry Stock Room**
	Function	Instructional Lab Support
	Occupancy	B
	Area (Assignable)	Varies
	No. of Occupants	1 - 3
	Adjacencies	Support Labs
	Accessibility	
	Hours of Use	6am - 11pm
	Additional Notes	
Architectural		
	Ceiling	9' cloud / open to structure
	Ceiling Height	9'- 0"
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl
	Base	Integral Cove
	Windows	Insulated glass
	Door Finish & Size	3'- 6"x 8'- 0" Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 40 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)208v power at equipment spaces; Stand-by power for equipment
	Lighting	Indirect LED @ 600 LUX; Task lights below wall cabinets with individual controls; Provide light switches at door
	Voice and Data	1 Voice, 4 Data per 100 SF
	Mechanical	Temperature – 66-74 deg F +/-; 100% Exhaust, no recirculation air; (6) air changes per hour min.; occupied (air change rate may be higher due to equip. Heat gain); (4) air changes per hour unoccupied Pressure-negative to corridor; Humidity- Ambient
	Equip. Heat Gain	25 Btuh/SF; 500 c.f.m. exhaust at each fume hood (VAV)
	Plumbing	Hot/Cold water (HW/CW) at sinks with vacuum breakers; Natural gas and vacuum; Hot Water at U.C. Washers Pure water at sinks and cupsinks; Domestic water and drain at safety shower/eyewash
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage & 1 pathway for fiber cable to the IDF
Laboratory		
	Hoods	Chemical Fumehood; Emergency power;
	Casework	Wood or metal casework - base cabinets, wall cabinets, tall cabinets; Epoxy resin tops and sinks; Faucets & fittings; Chemical fume hoods; Chemical storage cabinets
	Emergency	Eye wash, safety shower, fire extinguisher
	Equipment	Floor Equipment; Refrigerator and Freezers
Furniture / Equip	Fixed	
	Moveable	OFOI - Chairs; Benchtop analytical instruments; Carts
	Audio/Visual	

CHEMISTRY STOCK ROOM

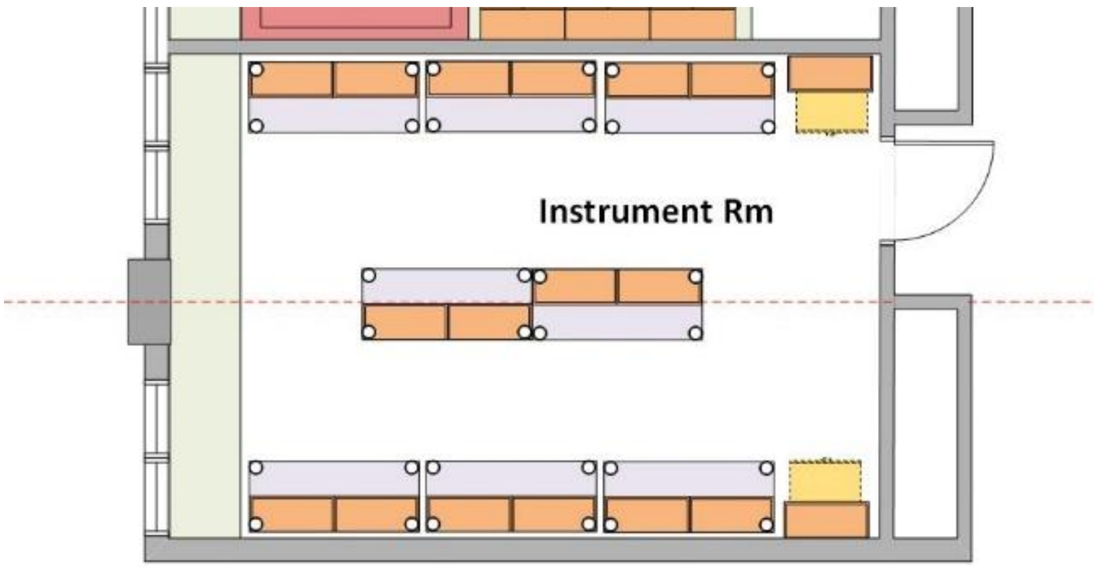
INSTRUCTIONAL LAB SUPPORT



Category	Sub-Category	Notes
General		
	Name	**Instrument Room**
	Function	Instructional Lab Support
	Occupancy	B
	Area (Assignable)	Varies
	No. of Occupants	1 - 4
	Adjacencies	Support Labs
	Accessibility	
	Hours of Use	6am - 11pm
	Additional Notes	
Architectural		
	Ceiling	9' cloud / open to structure
	Ceiling Height	9'- 0"
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl
	Base	Integral Cove
	Windows	Insulated glass
	Door Finish & Size	3'- 6"x 8'- 0" Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 40 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)208v power at equipment spaces; Stand-by power for equipment
	Lighting	Indirect LED @ 600 LUX; Provide light switches at door
	Voice and Data	1 Voice, 4 Data per 100 SF
	Mechanical	Temperature – 66-74 deg F +/-; 100% Exhaust, no recirculation air; Pressure-negative; Humidity- Ambient (6) air changes per hour min.; occupied (air change rate may be higher due to equip. Heat gain); (4) air changes per hour unoccupied
	Equip. Heat Gain	25 Btuh/SF; 800 c.f.m. exhaust at each fume hood (VAV)
	Plumbing	Nitrogen gas; Local cylinder gases;
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage & 1 pathway for fiber cable to the IDF
Laboratory		
	Hoods	
	Casework	Wood or metal casework - base cabinets, wall cabinets, tall cabinets; Mobile lab bench; Epoxy resin tops & fittings;
	Emergency	Fire extinguisher
	Equipment	Floor Equipment
Furniture / Equip		
	Fixed	
	Moveable	Chairs; Benchtop analytical instruments; Carts
	Audio/Visual	
	Additional Notes	

INSTRUMENT ROOM

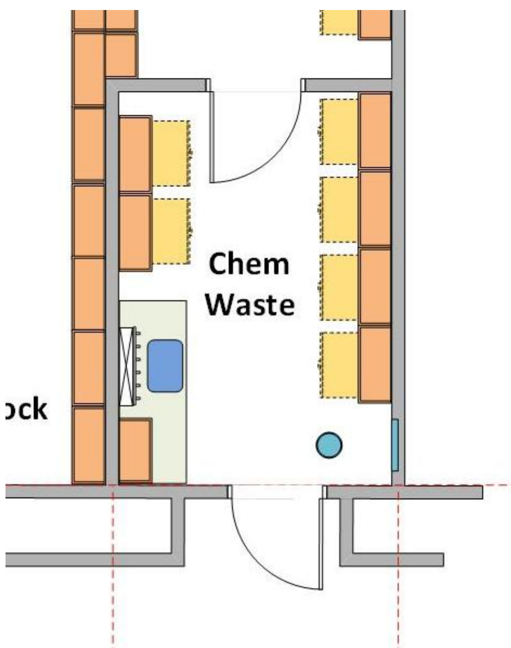
INSTRUCTIONAL LAB SUPPORT



Category	Sub-Category	Notes
General		
	Name	**Chemistry Waste**
	Function	Instructional Lab Support
	Occupancy	B
	Area (Assignable)	Varies
	No. of Occupants	1 - 2
	Adjacencies	Support Labs
	Accessibility	
	Hours of Use	6am - 11pm
	Additional Notes	
Architectural		
	Ceiling	Open to structure
	Ceiling Height	Open to structure
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl
	Base	Integral Cove
	Windows	Insulated glass
	Door Finish & Size	3'- 6"x 8'- 0" Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 40 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)208v power at equipment spaces; Stand-by power for equipment
	Lighting	Indirect LED @ 600 LUX; Task lights below wall cabinets with individual controls; Light switches at door
	Voice and Data	1 Voice, 4 Data per 100 SF
	Mechanical	Temperature – 66-74 deg F +/-; 100% Exhaust, no recirculation; Exhaust on Emergency power; Pressure-negative to corridor; Humidity- Ambient (6) air changes per hour min.; occupied (air change rate may be higher due to equip. Heat gain); (4) air changes per hour unoccupied
	Equip. Heat Gain	25 Btuh/SF
	Plumbing	Hot/Cold water (HW/CW) at sinks with vacuum breakers; Domestic water and drain at safety shower/eyewash
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
Laboratory		
	Hoods	
	Casework	Wood or metal casework - base cabinets, wall cabinets, tall cabinets; Epoxy resin tops and sinks; Faucets & fittings
	Emergency	Eye wash, safety shower, fire extinguisher
	Equipment	
Furniture / Equip		
	Fixed	
	Moveable	OFOI - Chairs; Benchtop analytical instruments; Carts; Chemical Waste Containers
	Audio/Visual	
	Additional Notes	

CHEMISTRY WASTE

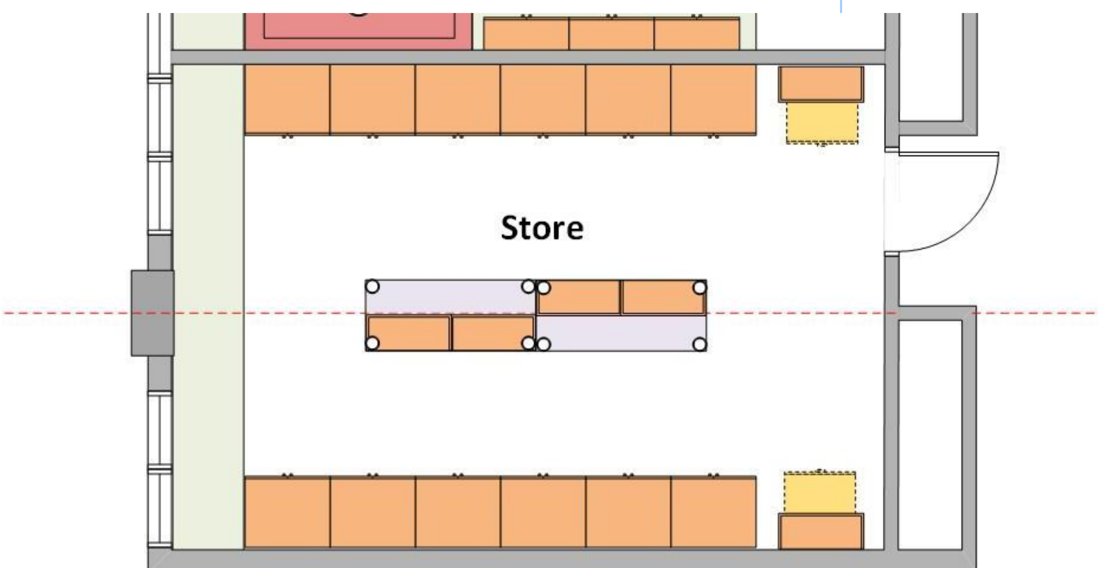
INSTRUCTIONAL LAB SUPPORT



Category	Sub-Category	Notes
General		
	Name	**Earth Science Store Room**
	Function	Instructional Lab Support
	Occupancy	B
	Area (Assignable)	Varies
	No. of Occupants	1 - 3
	Adjacencies	Support Labs
	Accessibility	
	Hours of Use	6am - 11pm
	Additional Notes	
Architectural		
	Ceiling	Open to structure
	Ceiling Height	Open to structure
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl
	Base	Integral Cove
	Windows	Insulated glass
	Door Finish & Size	3'- 6"x 8'- 0" Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 40 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit); 208v power at equipment spaces; Stand-by power for equipment
	Lighting	Indirect LED @ 600 LUX; Task lights below wall cabinets with individual controls; light switches at door
	Voice and Data	1 Voice at the door, Data as needed for equipment if required
	Mechanical	Temperature – 66-74 deg F +/-; 100% Exhaust, no recirculation; Exhaust on Emergency power; Pressure-negative to corridor; Humidity- Ambient; (6) air changes per hour min.; occupied (air change rate may be higher due to equip. Heat gain); (4) air changes per hour unoccupied
	Equip. Heat Gain	25 Btuh/SF; 800 c.f.m. exhaust at each fume hood (VAV)
	Plumbing	None
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
Laboratory		
	Hoods	Chemical Fumehood; Emergency power
	Casework	Wood or metal casework - base cabinets, wall cabinets, tall cabinets; Epoxy resin tops
	Emergency	Eye wash, safety shower, fire extinguisher
	Equipment	
Furniture / Equip		
	Fixed	
	Moveable	OFOI - Chairs; Benchtop analytical instruments; Carts
	Audio/Visual	
	Additional Notes	

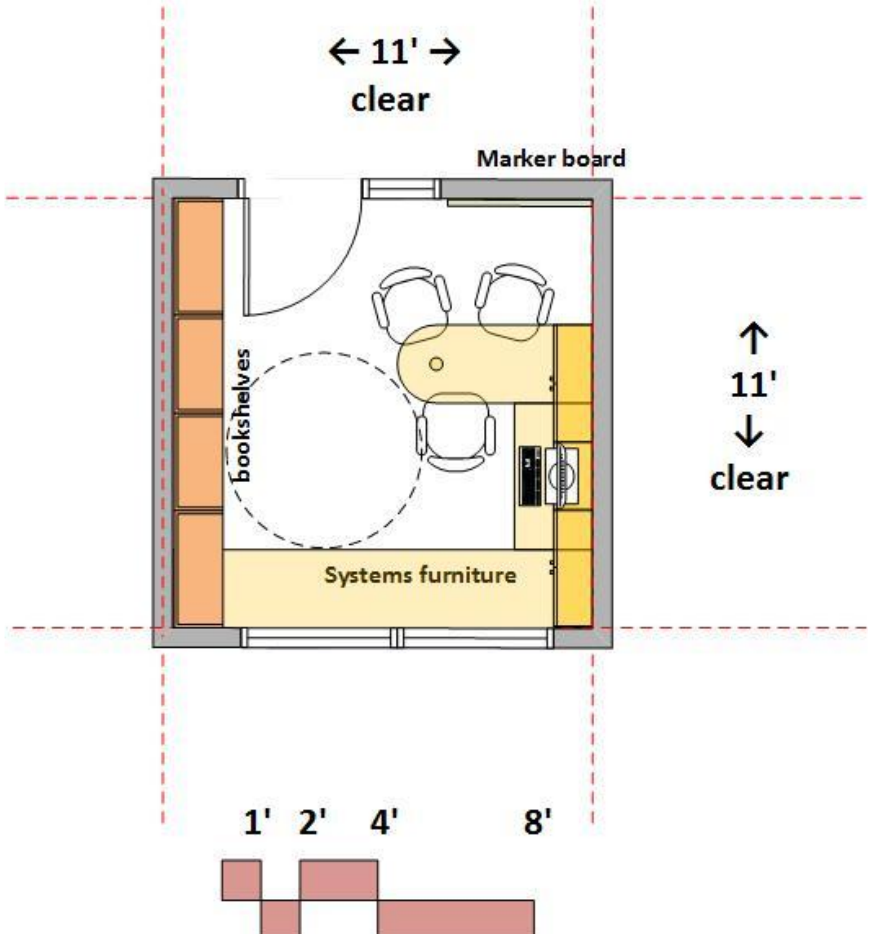
EARTH SCIENCE STORE ROOM

INSTRUCTIONAL LAB SUPPORT



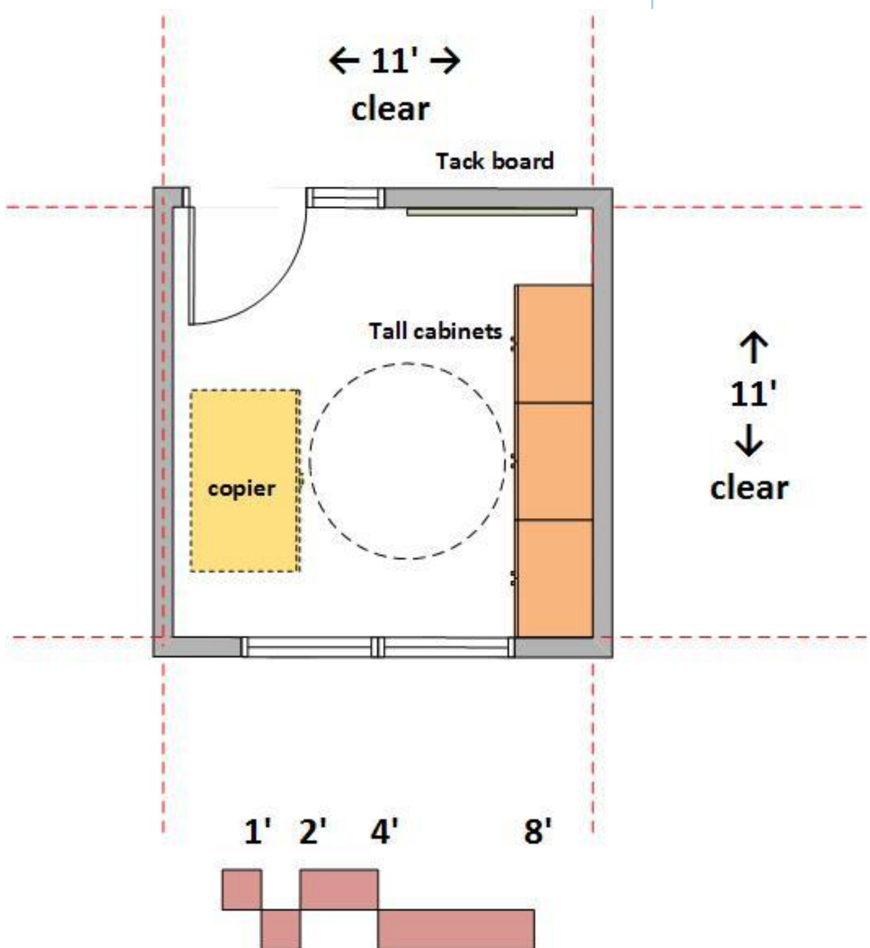
Category	Sub-Category	Notes
General		
	Name	**PI Office**
	Function	Private Office for Principal Investigator/Science Faculty
	Occupancy	B
	Area (Assignable)	120 SF
	No. of Occupants	1
	Adjacencies	Other PI offices
	Accessibility	Room
	Hours of Use	24/7
	Additional Notes	
Architectural		
	Ceiling	Acoustic tile
	Ceiling Height	9' minimum
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Static free carpet tile
	Base	Vinyl Base
	Windows	Insulated glass
	Door Finish & Size	3'- 0"x 8'- 0" Wood Solid Core with window
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 35 or less
	Additional Notes	
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)
	Lighting	Indirect LED @ 500 LUX; Task lights below wall cabinets with individual controls; light switches at door
	Voice and Data	Voice/Data at each perimeter wall
	Mechanical	Temperature – 66-74 deg F +/-; Recirculated air
	Equip. Heat Gain	20 Btuh/SF
	Plumbing	None
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
Laboratory		None
Furniture / Equip		
	Fixed	None
	Moveable	Office system furniture- Owner furnished & installed
	Audio/Visual	None
	Additional Notes	

PI OFFICE


← 11' →
clear
Marker board
bookshelves
Systems furniture
↑
11'
↓
clear
1'
2'
4'
8'

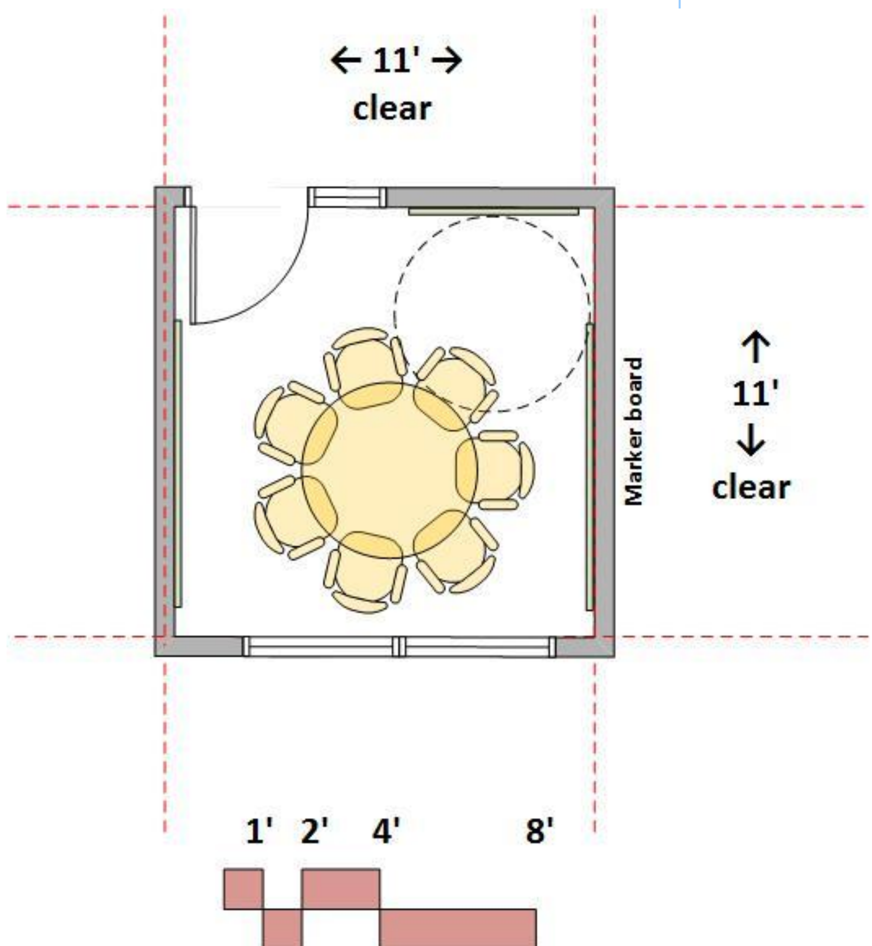
Category	Sub-Category	Notes
General		
	Name	**Office Support**
	Function	Room for office supply storage/file storage
	Occupancy	B
	Area (Assignable)	120 SF
	No. of Occupants	2 - 3
	Adjacencies	Other PI offices
	Accessibility	Room
	Hours of Use	6 am to 12 midnight
	Additional Notes	
Architectural		
	Ceiling	Acoustic tile
	Ceiling Height	9' minimum
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Sheet vinyl or static free carpet tile
	Base	Vinyl Base
	Windows	Insulated glass- if any
	Door Finish & Size	3'- 0"x 8'- 0" Wood Solid Core with window
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 35 or less
	Additional Notes	
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit) 208v power at copy machine
	Lighting	Indirect LED @ 500 LUX; light switches at door
	Voice and Data	Voice/Data at each perimeter wall
	Mechanical	Temperature – 66-74 deg F +/-; Recirculated air
	Equip. Heat Gain	25 Btuh/SF
	Plumbing	None
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
Laboratory		None
Furniture / Equip		
	Fixed	None
	Moveable	Storage cabinets; copy machine
	Audio/Visual	None
	Additional Notes	

OFFICE SUPPORT



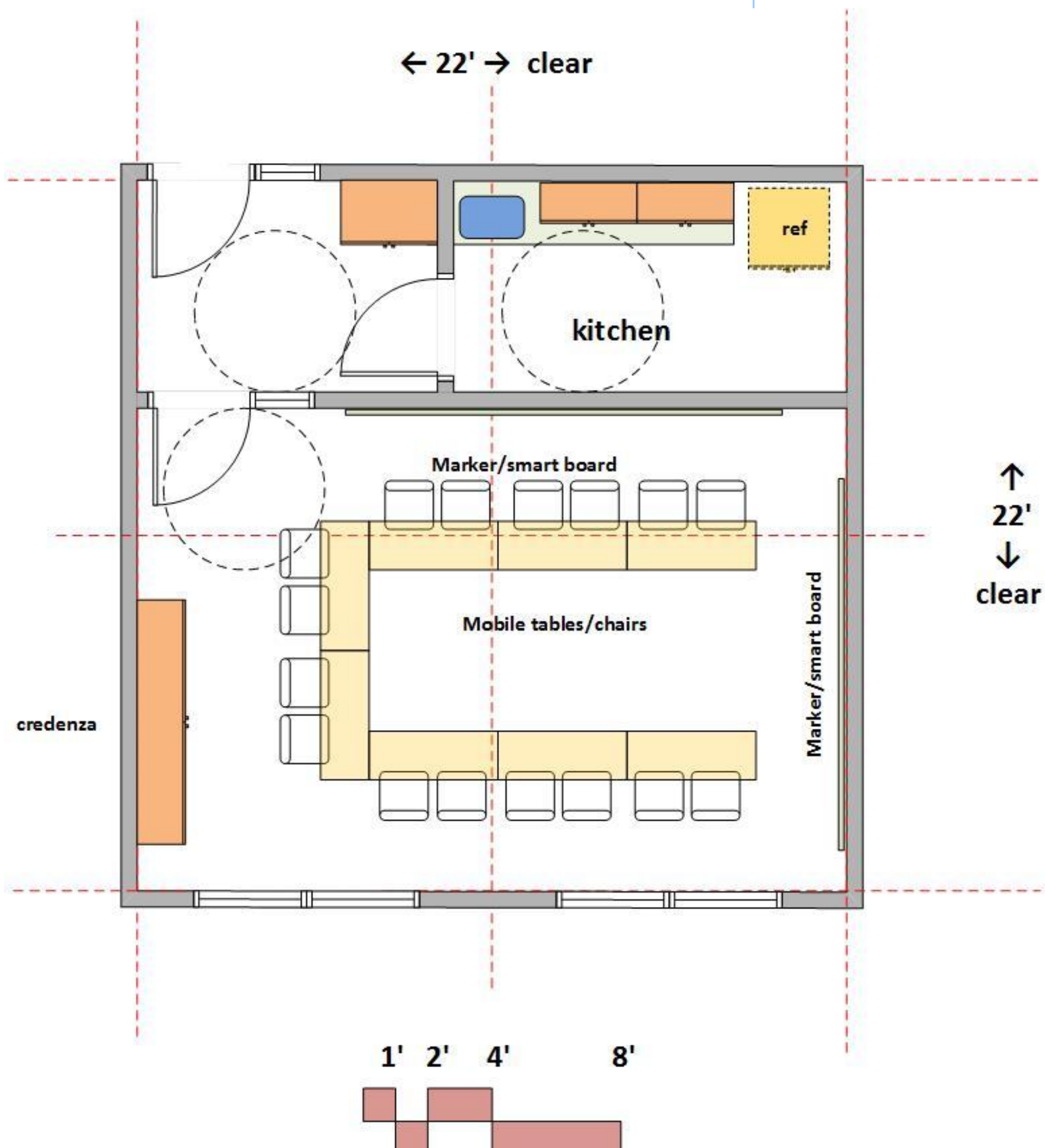
Category	Sub-Category	Notes
General		
	Name	**Small Meeting**
	Function	Shared meeting room
	Occupancy	B
	Area (Assignable)	120 SF
	No. of Occupants	6 - 8
	Adjacencies	Other PI offices
	Accessibility	Room
	Hours of Use	6 am to 12 midnight
	Additional Notes	
Architectural		
	Ceiling	Acoustic tile
	Ceiling Height	9' minimum
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Static free carpet tile
	Base	Vinyl Base
	Windows	Insulated glass- if any
	Door Finish & Size	3'- 0"x 8'- 0" Wood Solid Core with window
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 35 or less
	Additional Notes	
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)
	Lighting	Indirect LED @ 500 LUX; light switches at door
	Voice and Data	Voice/Data at each perimeter wall
	Mechanical	Temperature – 66-74 deg F +/-; Recirculated air
	Equip. Heat Gain	15 Btuh/SF
	Plumbing	None
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
Laboratory		None
Furniture / Equip		
	Fixed	Marker boards
	Moveable	Table and chairs
	Audio/Visual	None
	Additional Notes	

SMALL MEETING



Category	Sub-Category	Notes
General		
	Name	**Conference Room**
	Function	Conference Room
	Occupancy	B
	Area (Assignable)	400 SF
	No. of Occupants	16 - 20
	Adjacencies	PI offices
	Accessibility	Room
	Hours of Use	24/7
	Additional Notes	
Architectural		
	Ceiling	Acoustic tile
	Ceiling Height	10' recommended; 9' minimum
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Static free carpet tile
	Base	Vinyl Base
	Windows	Insulated glass
	Door Finish & Size	3'- 0"x 8'- 0" Wood Solid Core with window
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 35 or less
	Additional Notes	
Building Systems		
	Electrical	110v fourplex and duplex outlets (maximum of four duplex per circuit)
	Lighting	Indirect LED @ 500 LUX; light switches at door
	Voice and Data	Voice/Data at each perimeter wall
	Mechanical	Temperature – 66-74 deg F +/-; Recirculated air
	Equip. Heat Gain	20 Btuh/SF
	Plumbing	None
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
Laboratory		None
Furniture / Equip		
	Fixed	Marker/smart boards
	Moveable	Mobile chairs/tables; credenza
	Audio/Visual	Smart board
	Additional Notes	

CONFERENCE ROOM



Category	Sub-Category	Notes
General		
	Name	**Kitchen**
	Occupancy	B
	Area (Assignable)	80 SF
	No. of Occupants	2-3
	Adjacencies	Conference Room
	Accessibility	Room
	Hours of Use	24/7
	Additional Notes	
Architectural		
	Ceiling	Acoustic tile
	Ceiling Height	8' - 0"
	Wall Finish	Gypsum board and semi-gloss enamel paint
	Floor Finish	Sheet Vinyl
	Base	Vinyl Base
	Windows	Insulated glass
	Door Finish & Size	3'- 0"x 8'- 0" Wood Solid Core with window
	Door Frames	Hollow Metal
	Daylighting	At exterior windows (if exist)
	Acoustics	NC 35 or less
	Additional Notes	
Building Systems		
	Electrical	110v duplex outlets (maximum of four duplex per circuit)
	Lighting	Indirect LED @ 500 LUX; light switches at door
	Voice and Data	None
	Mechanical	Temperature – 66-74 deg F +/-; Recirculated air
	Equip. Heat Gain	20 Btuh/SF
	Plumbing	Hot/cold water at sink; cold water at refrigerator for ice machine
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
Laboratory		None
Furniture / Equip		
	Fixed	Kitchen casework, sink
	Moveable	Microwave, Refrigerator, Owner furnished
	Audio/Visual	None
	Additional Notes	

12.0

DESIGN CRITERIA PIERCE HALL IMPROVEMENTS CLASSROOM ADDITION

12.1 INTRODUCTION

UCR has indentified the need for general assignment classrooms on campus. These would be large Lecture Halls in the 150 to 200 station range, and flexible classrooms in the 80 to 120 station range. It is assumed that Lecture Halls would have sloped floors and fixed seating, and the flexible classrooms would have a flat floor with moveable furniture.

The program has been defined as a freestanding Instructional Building with 200 stations at approximately 25 ASF/station. This equates to a building of approximately 5,000 ASF, and 6,600 GSF, including associated support spaces. These have been identified as Electrical, Audio/Visual, I.T., and Restrooms.

The proposed classroom addition, north of existing Pierce Hall, is at the crossroads of a major east-west pedestrian corridor and the Commons Mall, and in close proximity to the Highland Union Building. The high traffic area makes these facilities readily accessible to the campus community. Incorporated into the project is reconfiguration of the existing loading dock service area to accommodate the classroom building, and to improve campus circulation along a major east/west pedestrian corridor.

The addition will provide new general assignment classroom(s) that are technologically enhanced and flexibly configured to allow for interactive learning concepts in the field of science, technology engineering and mathematics (STEM) programs.

12.2 SITE CONSIDERATIONS & ANALYSIS

Pierce Hall is located at an important juncture of the UCR campus bordering the Carillon Mall on the south, the Commons Mall on the west, and a major east/west pedestrian route on the north. The existing loading dock is located on the north end of Pierce Hall, with service access to the west.

The location of the classroom addition should accommodate the existing functions, preserve land for future expansions, enhance campus connectivity and provide appropriate scale to the campus.

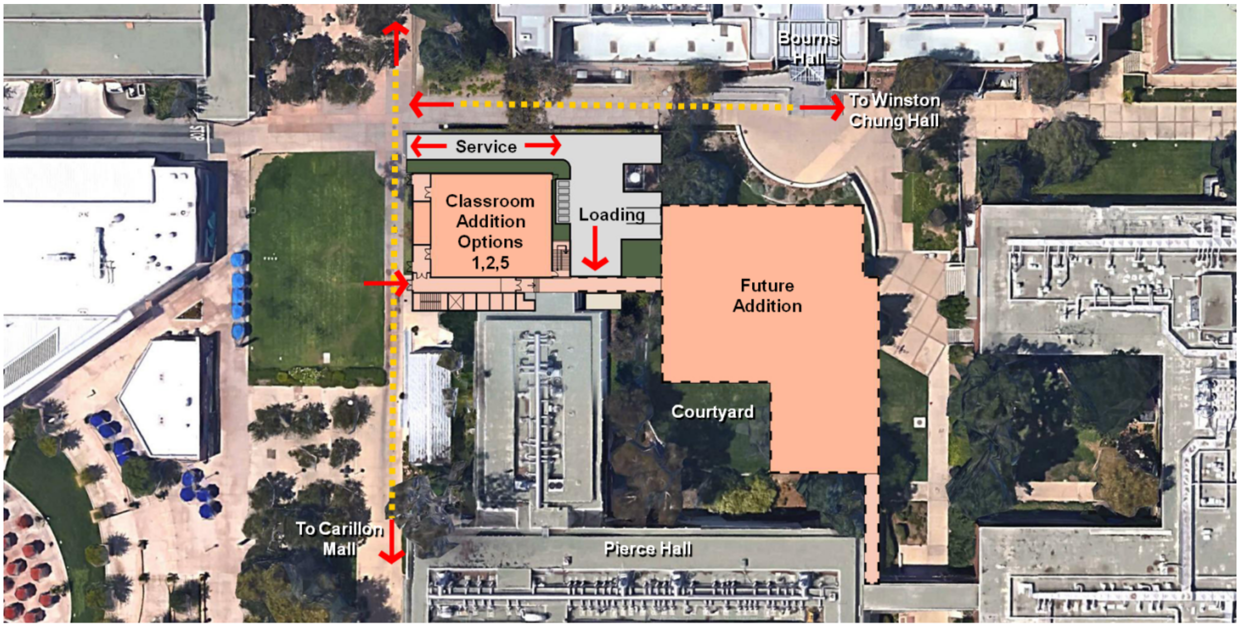
There were two primary areas identified as potential sites for the classroom addition: the northwest corner between the existing loading dock and the Commons Mall, and the northeast corner of the existing landscaped courtyard adjacent to the Bourns Hall main entry and the existing Geology Building.

It was determined that the best location would be the northwest corner, facing the Commons Mall. This location preserves the northeast corner for a larger future addition similar to the 2001 Pierce Hall addition. This location also requires the reconfiguration of the existing loading dock.

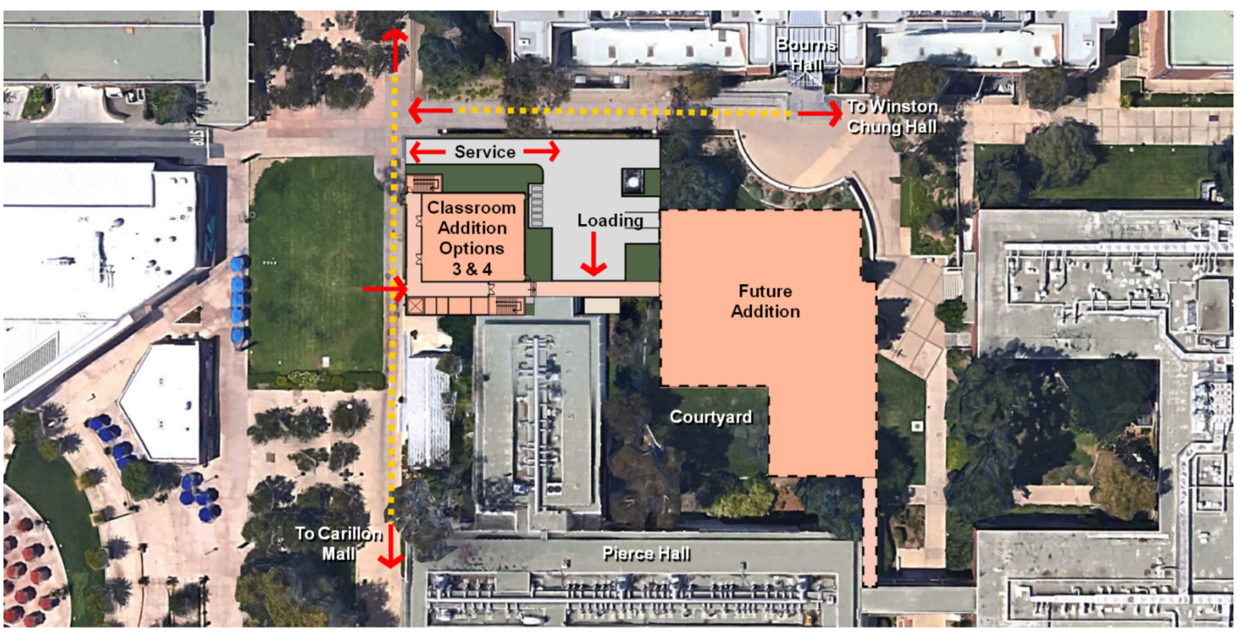
The classroom addition site requirements are:

- Locate classroom addition north of Pierce Hall and west of the loading dock.
- Orient the front door towards the Commons Mall.
- Improve pedestrian circulation, safety, and create a connection to the existing Pierce Hall north entry.
- Widen the east west pedestrian pathway north of the existing loading dock.
- Reconfigure the loading dock to accommodate the classroom addition, allow for the widening of the north pedestrian pathway, maintain service to the existing nitrogen tanks, improve loading and delivery to Pierce Hall, and separate pedestrian traffic from loading dock function.
- Separate the student pedestrian circulation to Pierce Hall north entrance from the loading dock.

The site plans on the next page illustrate these concepts.



Site Plan – Options 1, 2 and 5



Site Plan – Options 3 and 4

12.3 PLANNING GUIDELINES

The workshops established the parameters and goals for the classroom addition. The Working Group explored the need for both lecture hall style sloped floor classrooms and for flat floor, multi configuration, interactive learning classrooms. The preferred location at the northeast corner of the site allows for entry identity from the Commons Mall and a ground floor slope that follows existing grades.

The preferred location will accommodate the five classroom addition options including one and two story buildings with larger or smaller footprints and various combinations of classroom types and sizes, as outlined on page 8.

The reconfigured loading dock allows for the relocation of the service drive, and widening of the east/west pedestrian access to the north. The loading dock provides a reduced fire truck back up space, service vehicle parking, trash and recycling locations, and a location for existing nitrogen gas tank and new emergency generator.

The proposed classroom addition location maintains the land bank in the north east corner for a future Pierce Hall laboratory or classroom addition. This proposed location accommodates the classroom addition, independent of the decision to widen the east/west pedestrian circulation corridor.

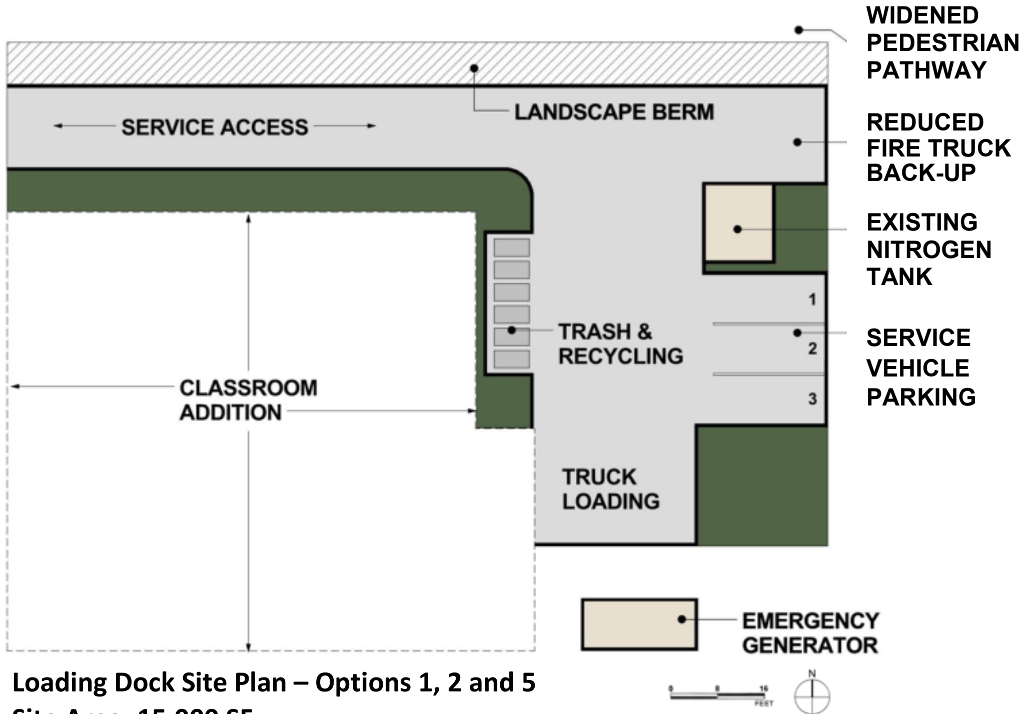
12.4 SITE ANALYSIS SUMMARY

The proposed site is the northwest corner of Pierce Hall between the loading dock and the Commons Mall.

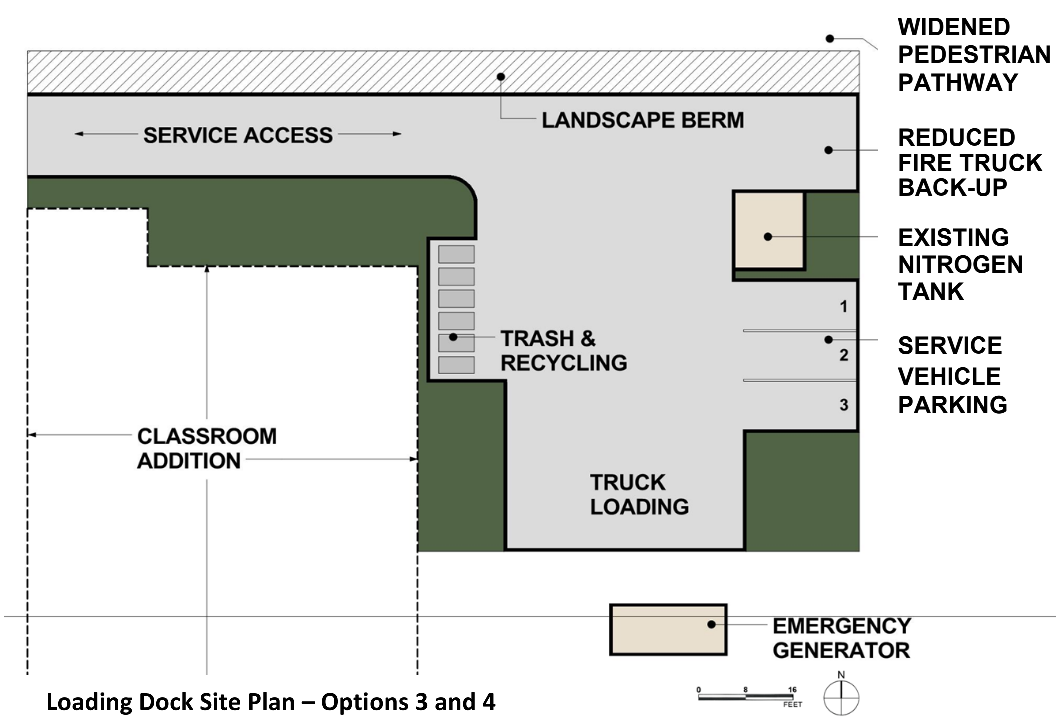
Placement of the classroom addition adjacent to the loading dock area requires reconfiguration of the existing loading dock service area to support the new classrooms and improve pedestrian circulation and access. The workshop analysis established the priorities and identified the inter-relationships of buildings, entries, service areas, circulation, and expansion opportunity as listed below:

- A stronger connection to the Commons Mall is recommended, as this is a centrally scheduled classroom function.
- Entrance to the new classrooms and student pedestrian circulation would be separated from the loading dock by building orientation and proper landscape screening.
- The site analysis provided in the workshops confirmed the building location as it relates to future site utilization, land bank and Commons Mall accessibility.
- The proposed classroom site reserves the land between Pierce Hall and Geology for a larger future addition.
- Analysis took into account functional issues related to service vehicle traffic, loading dock, pedestrian circulation, on-site emergency generator, and existing nitrogen tanks.
- Proposed emergency generator enclosure is included adjacent to the service yard.
- Connectivity between east/west campus pedestrian path south of Bourns Hall and north of the loading dock, leading to the Highland Union Building would be improved.

The diagrams in the next page illustrate these concepts.



Loading Dock Site Plan – Options 1, 2 and 5
Site Area: 15,000 SF



Loading Dock Site Plan – Options 3 and 4
Site Area: 15,000 SF

12.5 CLASSROOM OPTIONS

The UCR workshops analyzed the general assignment classroom programmatic requirements for STEM programs, classroom sizes based on campus needs, and orientation to the Commons Mall, existing Pierce Hall, and the loading dock.

Options were developed to accommodate two basic classroom types:

1. Larger lecture hall style classrooms to accommodate 120 to 200 stations, with sloped floor, volume ceiling, fixed seating, and fixed presentation location. The group preferred two rows of seats per stepped floor, and a center aisle in the room to allow for interactive learning and more dynamic teacher/student communication.

2. Intermediate sized reconfigurable classrooms to accommodate 80 stations, with flat floor, volume ceiling, moveable seating, and multi-point presentations.

Diagrams of classroom types and seating configurations are provided. The options developed were based on one and two story concepts and multiple configurations and numbers of classrooms that can accommodate between 160 stations and 360 stations. A matrix has been provided showing number of floors, number of stations, assignable area by station and building, gross building area, and estimated cost.

Support spaces were identified as Entry Vestibules, Audio Visual and I.T. Rooms, Electrical Rooms and Restrooms. Mechanical equipment for the classrooms is assumed to be on the Instructional Building roof with screen walls.

The concept of a sloped floor lecture hall style classroom on the ground floor, with entry from the west takes advantage of the existing grades which slope down from the west to the loading dock on the east.

The five options developed have a consistent site location north of Pierce Hall and west of the existing loading dock.

The five options are described below:

Option 1:
One story with 200 seat lecture hall style classroom.

Option 2:
Two story with 200 seat lecture hall style classroom on first floor and 2-80 seat reconfigurable classrooms on the second floor.

Option 3:
Two story with 120 seat lecture hall style classroom on the first floor and one 80 seat reconfigurable classroom on the second floor. Second floor area is reduced, and replaced with one story roof.

Option 4:
Two story with 120 seat lecture hall style classroom on the first floor and one 80 seat reconfigurable classroom on the second floor. Second floor area is the same size as first floor, with support space that allows for future classroom expansion.

Option 5:
One story with 2 – 80 seat reconfigurable classrooms.

OPTIONS	STORIES	BLDG ASF	BLDG GSF
Option 1	1-Story	4,670 ASF	6,000 GSF
Option 2	2-Story	8,960 ASF	11,000 GSF
Option 3	2-Story	5,580 ASF	7,300 GSF
Option 4	2-Story	6,280 ASF	8,000 GSF
Option 5	1-Story	4,670 ASF	6,000 GSF

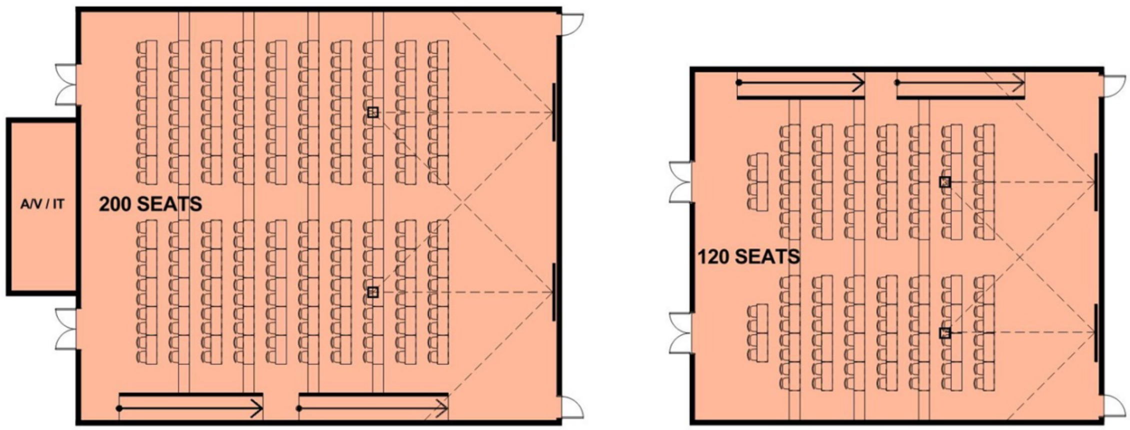
12.6 PROPOSED CLASSROOM PROGRAM

Program provided is for Option 1.

Option 1 - One Story

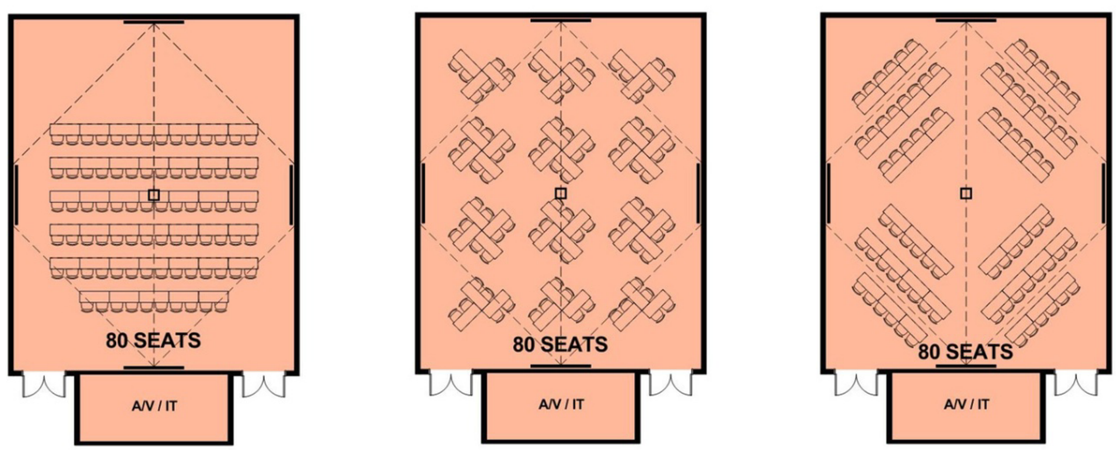
Room Type	Quantity	ASF each	Total ASF	ASF / Seat
200 Seat Lecture Hall	1	4,000	4,000	20
AV / IT	1	200	200	
Electrical	1	120	120	
Toilets	5	70	350	
Total ASF			**4,670 ASF**	
Total Building Gross			**6,000 GSF**	**78%**

The following diagrams illustrate the classroom types and the five classroom building options. Each option includes a description and analysis of benefits, shortfalls, site, estimated cost, area, and function.



CLASSROOM TYPE – SLOPED FLOOR AUDITORIUM STYLE 200 / 120 SEATS

Scale 3/32" = 1'



CLASSROOM TYPE – FLAT FLOOR RECONFIGURABLE 80 SEATS

Scale 3/32" = 1'

Option 1

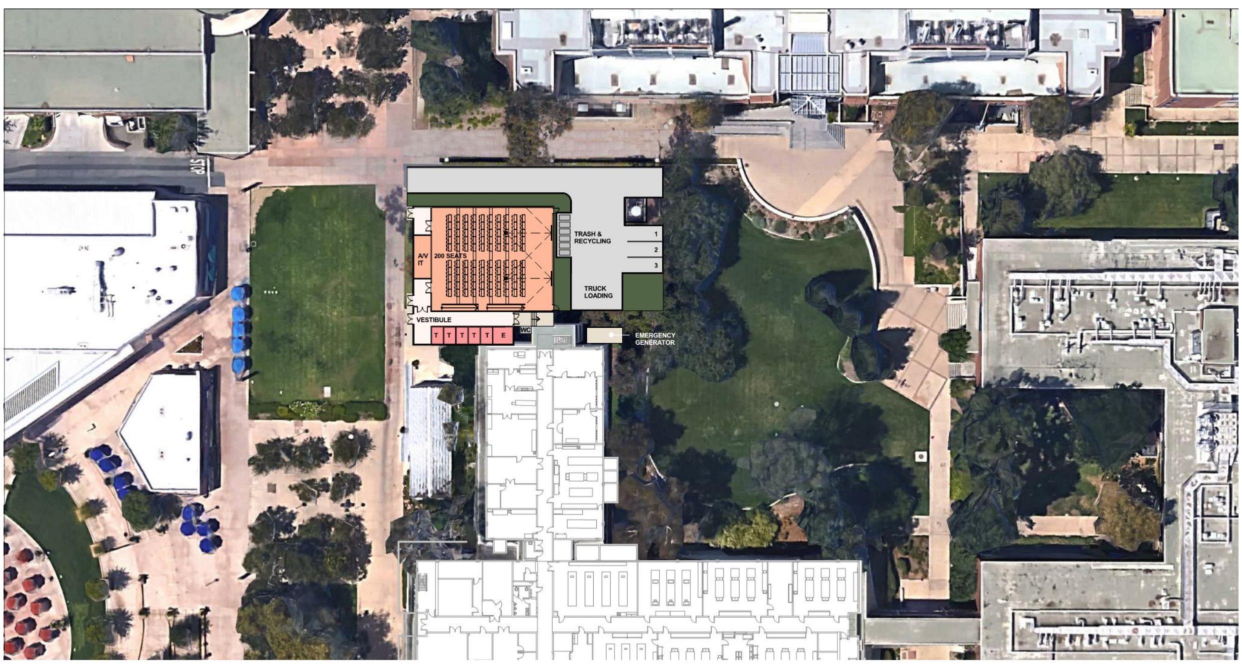
One story with 200 seat lecture hall style classroom. This option provides a single 200 seat classroom with sloped floor and lecture hall style presentation and audio/visual display at the front end. The floor is stepped with every two rows of seats on one level for interaction between students.

Pros:

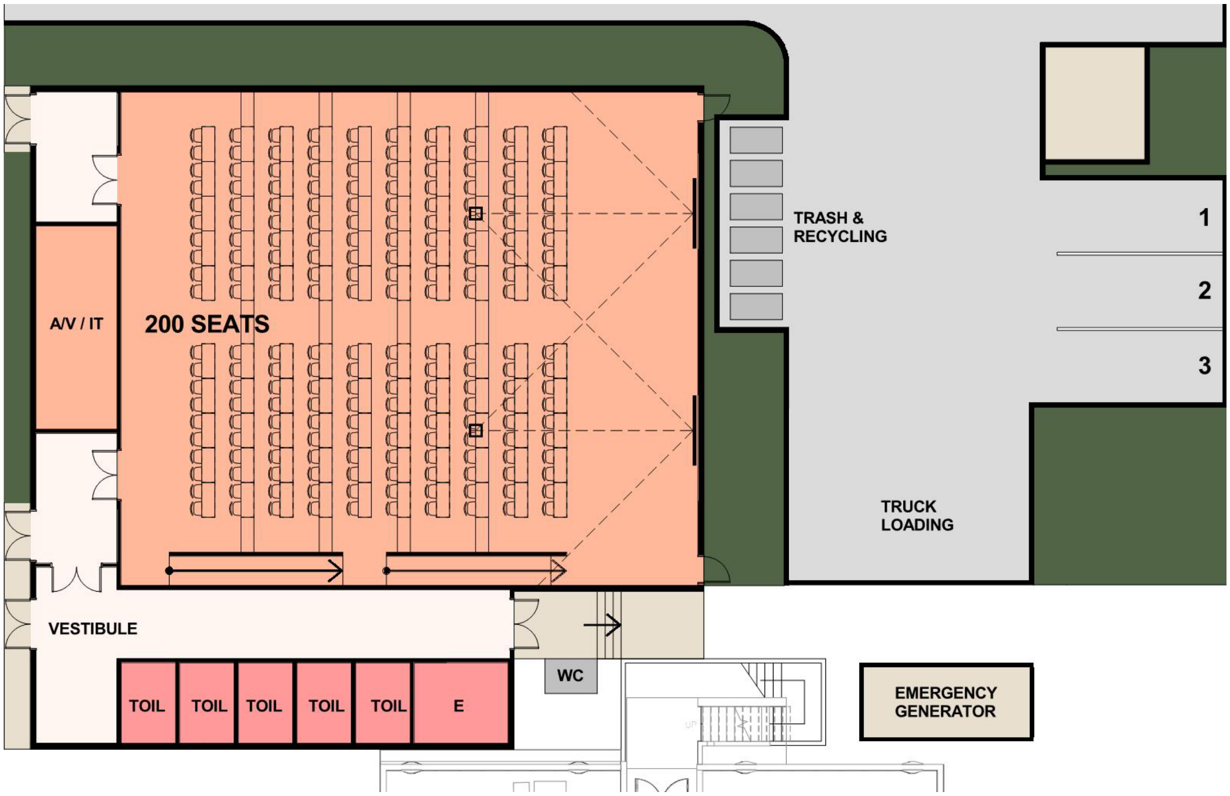
- Provides 200 seat, lecture hall style Classroom.
- Addition fits within reconfigured Loading Dock area.
- Orients main entry West, towards Commons Mall.
- Interconnects with existing Pierce Hall First Floor.
- Conforms with UCR Program of 6,600 GSF.

Cons:

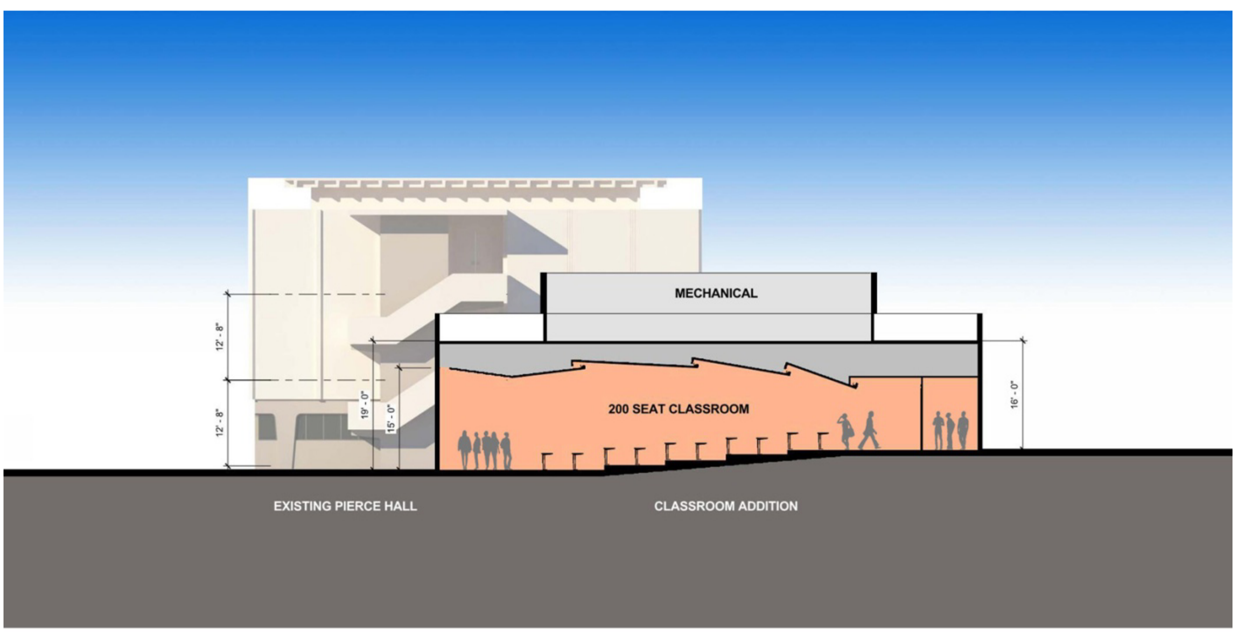
- Does not provide multi-use, reconfigurable classroom.
- One story building underutilizes the land area at a critical Campus location.



OPTION 1 SITE PLAN



OPTION 1 FIRST FLOOR – 200 SEATS



SECTION LOOKING SOUTH – OPTION 1

Option 2

Two story with 200 seat lecture hall style classroom on first floor and 2-80 seat reconfigurable classrooms on second floor.

This option provides a 200 seat lecture hall style classroom similar to option 1, with 2-80 seat flat floor reconfigurable classrooms on the second floor. The reconfigurable classrooms allow for interactive learning with re-arrangable seats and stations, and multi-point audio/visual locations for non-linear presentations and student interaction.

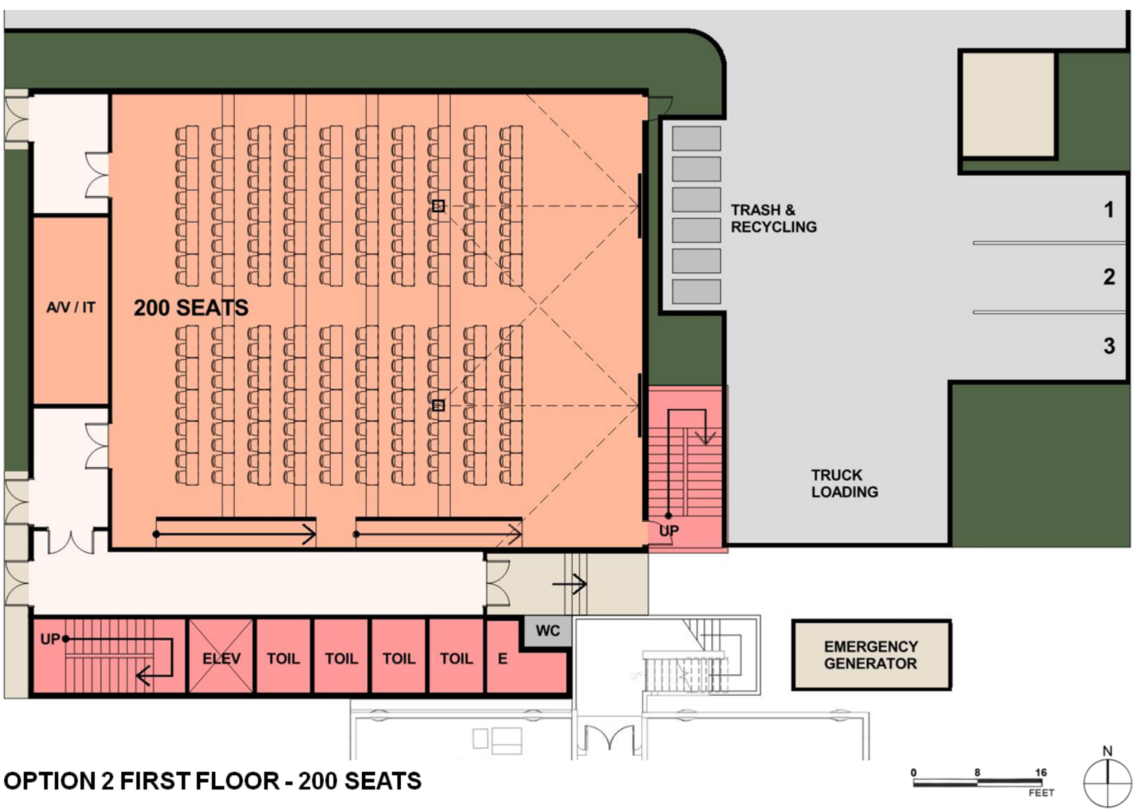
Pros:

- Provides a 200 seat, lecture hall style Classroom, and two 80 seat, reconfigurable Classrooms.
- Addition fits within reconfigured Loading Dock area.
- Orients main entry West, towards Commons Mall.
- Interconnects with existing Pierce Hall First Floor.
- Two story building maximizes land use at a critical Campus location, within existing height guidelines.

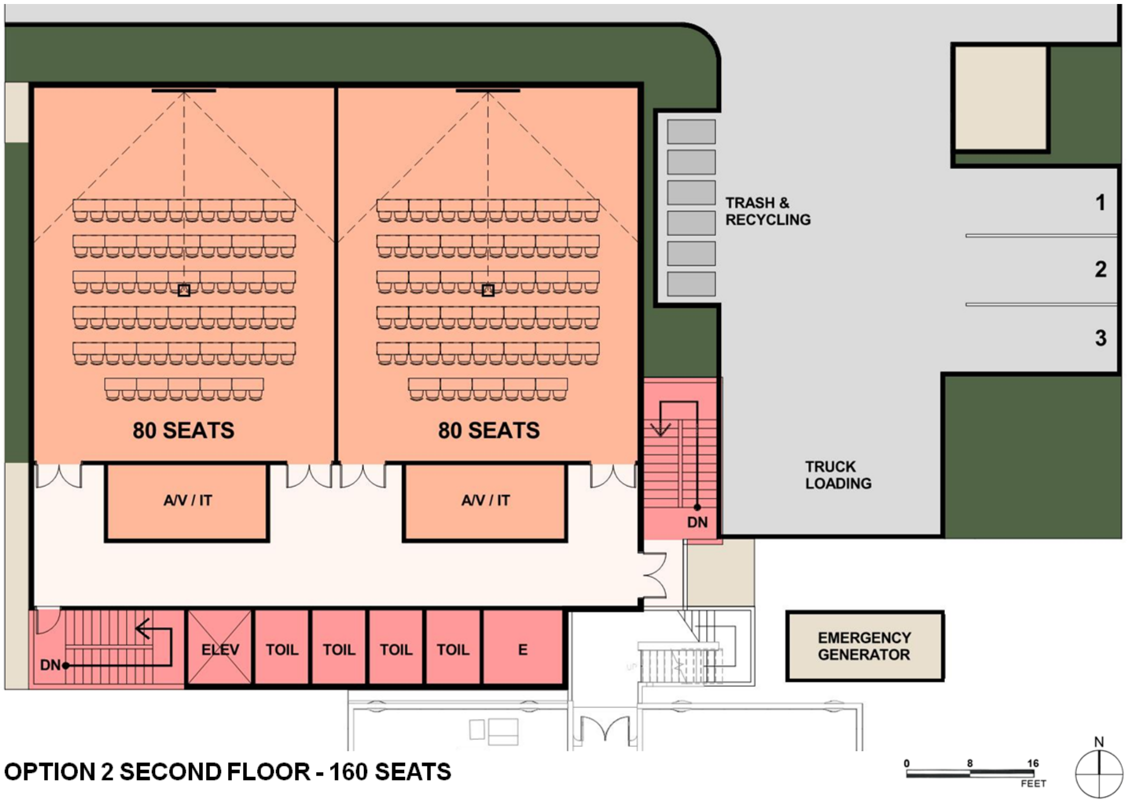
Cons:

- Exceeds UCR Program of 6,600 GSF by 4,400 GSF

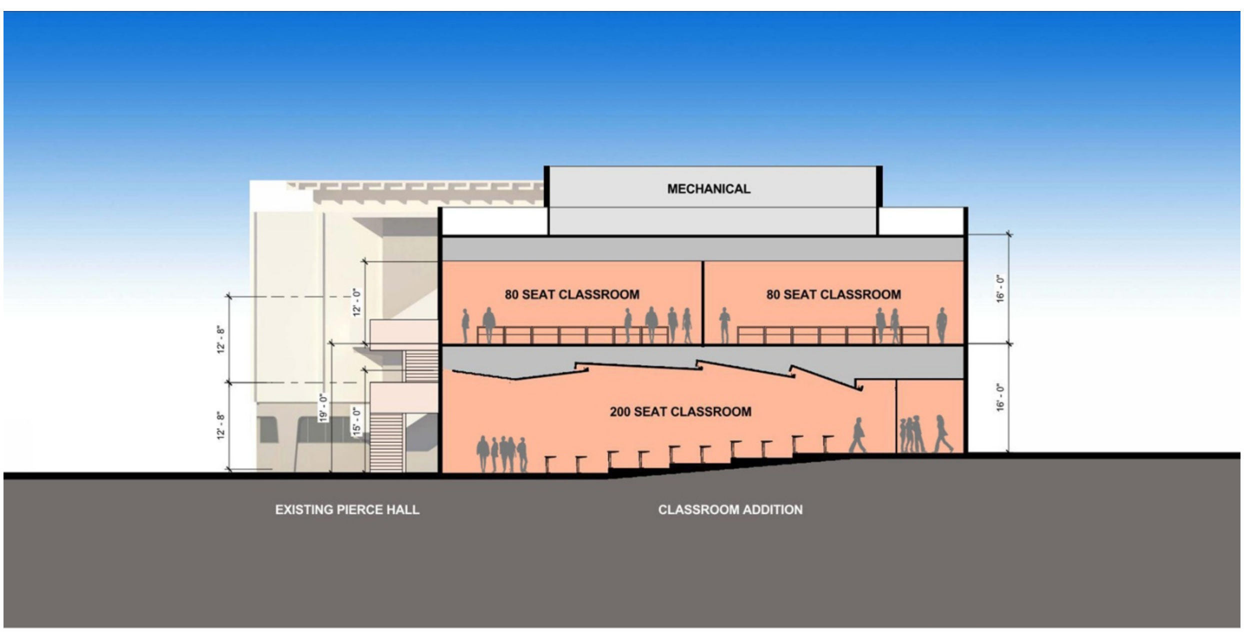
OPTION 2 SITE PLAN



OPTION 2 FIRST FLOOR - 200 SEATS



OPTION 2 SECOND FLOOR - 160 SEATS



SECTION LOOKING SOUTH – OPTION 2

Option 3

Two story with 120 seat lecture hall style classroom on the first floor and one 80 seat reconfigurable classroom on the second floor. The second floor area is reduced, and replaced with one story roof. This option provides educational opportunities similar to option 2, with smaller student capacity based on university based classroom size needs.

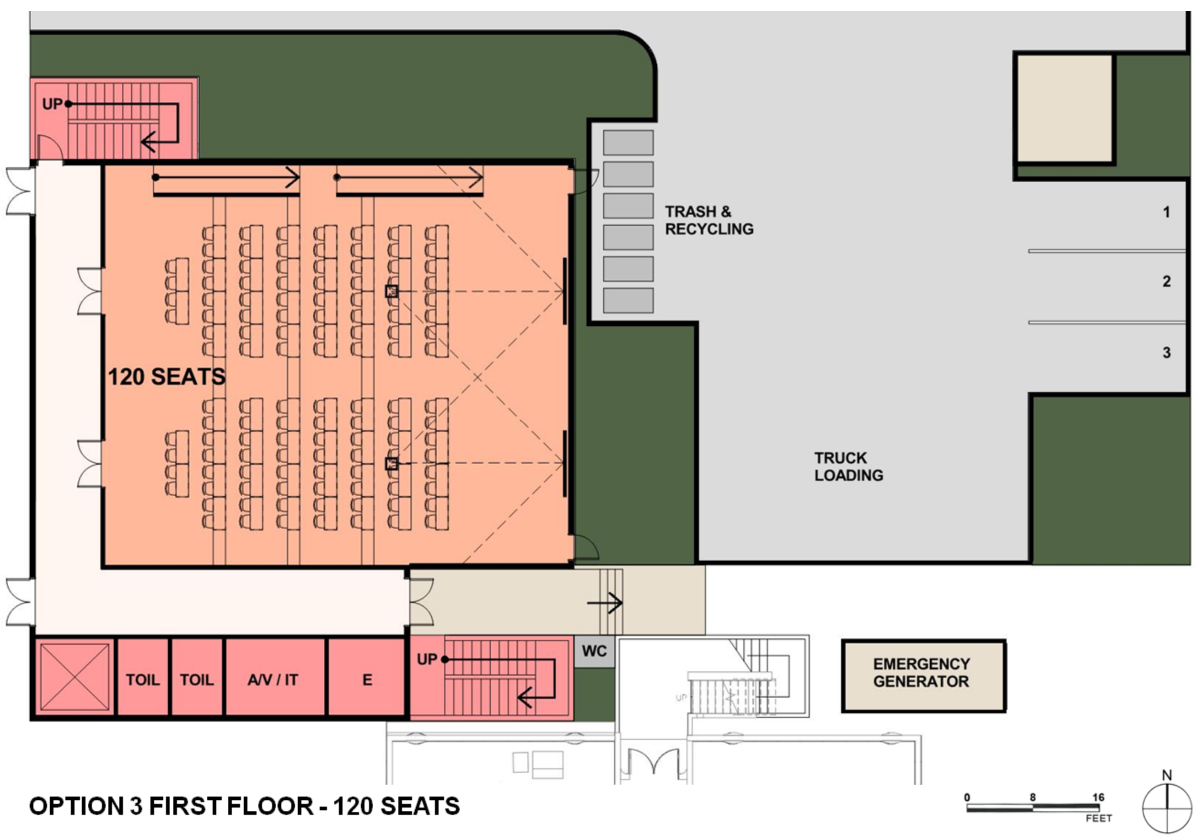
Pros

- Provides a 120 seat, lecture hall style Classroom and an 80 seat, reconfigurable Classroom.
- Smaller building footprint reduces impact on the reconfigured Loading Dock.
- Roof on Second Floor reduces the overall building area.
- Orients main entry West, towards Commons Mall.
- Interconnects with existing Pierce Hall First Floor.
- Two story building maximizes land use at a critical Campus location, within existing height guidelines.

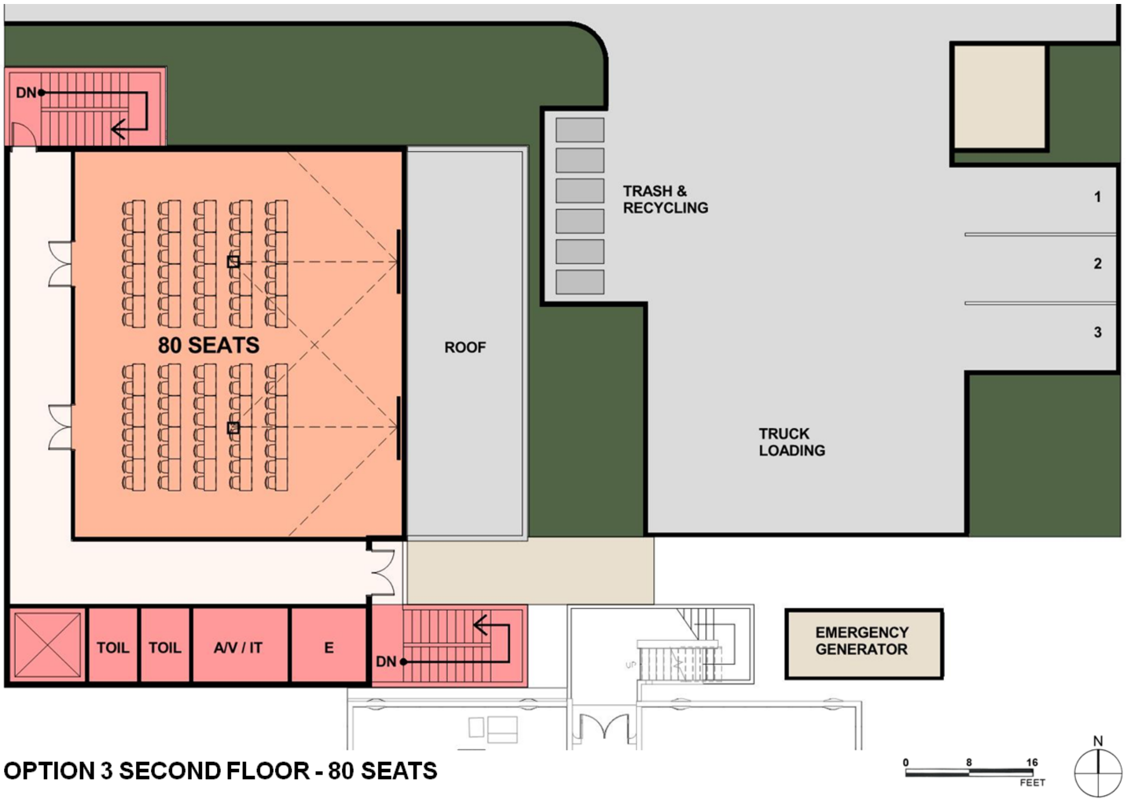
Cons

- Exceeds UCR Program of 6,600 GSF by 700 GSF.

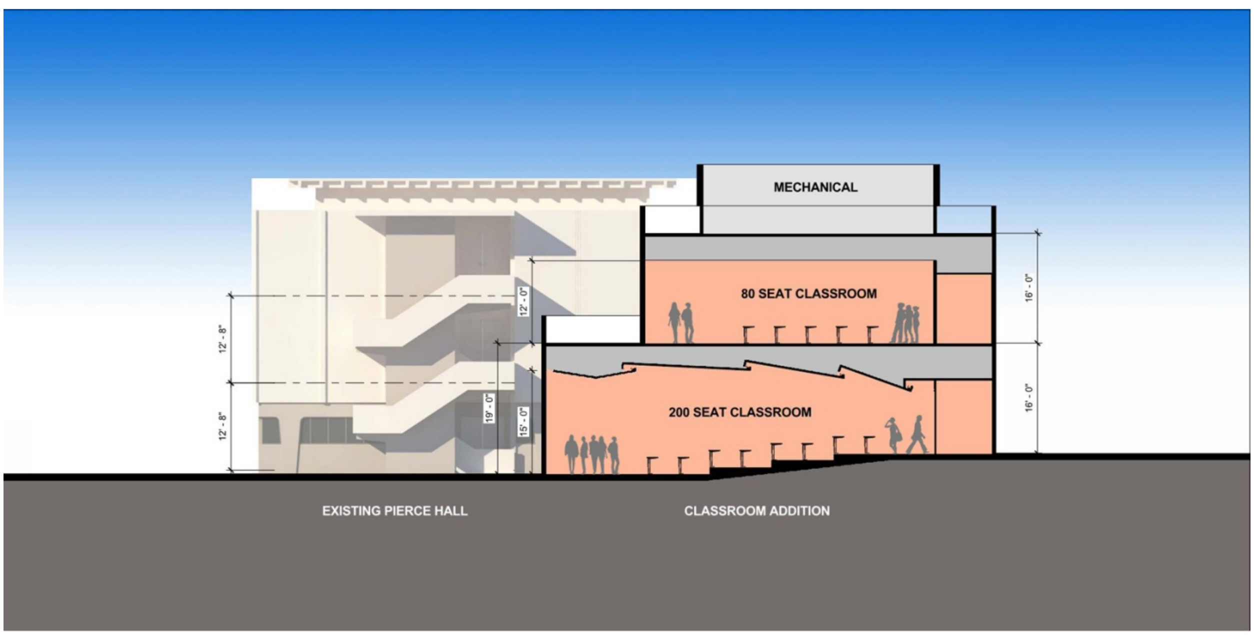
OPTION 3 SITE PLAN



OPTION 3 FIRST FLOOR - 120 SEATS



OPTION 3 SECOND FLOOR - 80 SEATS



SECTION LOOKING SOUTH – OPTION 3

Option 4

Two story with 120 seat lecture hall style classroom on the first floor and one 80 seat reconfigurable classroom on the second floor. The second floor area is the same size as first floor, with support space that allows for future classroom expansion.

This option provides educational opportunities similar to option 2, with smaller student capacity similar to option 3, but with limited future expansion space on the second floor.

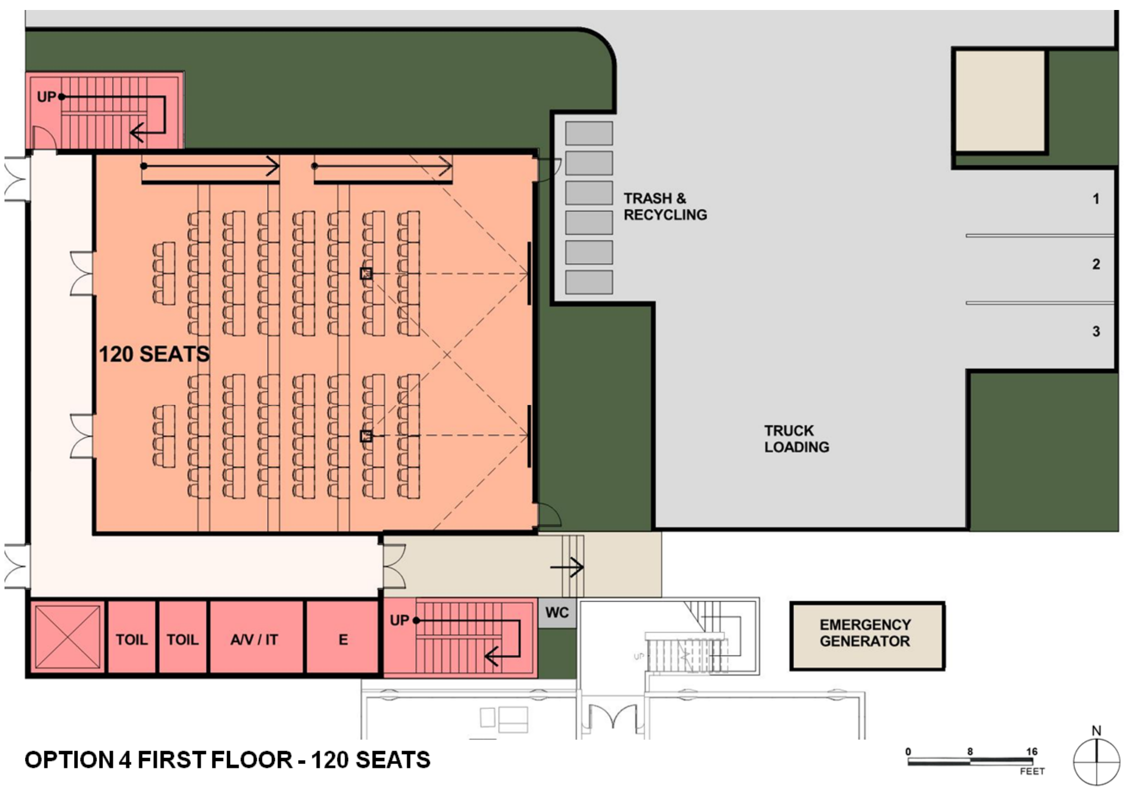
Pros:

- Provides a 120 seat, lecture hall style Classroom and an 80 seat, reconfigurable Classroom.
- Smaller building footprint reduces impact on the reconfigured Loading Dock.
- Support space on Second Floor allows for expansion of Classroom program in the future.
- Orients main entry West, towards Commons Mall.
- Interconnects with existing Pierce Hall First Floor.
- Two story building maximizes land use at a critical Campus location, within existing height guidelines.

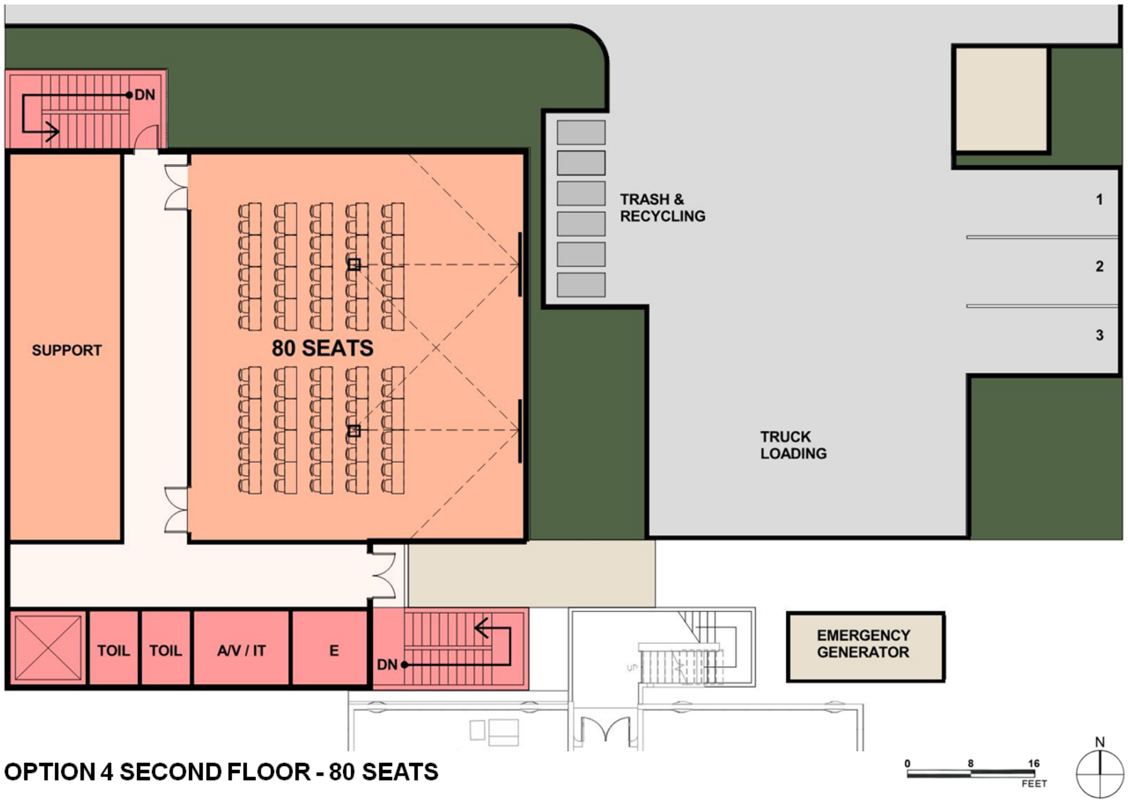
Cons:

- Exceeds UCR Program of 6,600 GSF by 1,400 GSF.

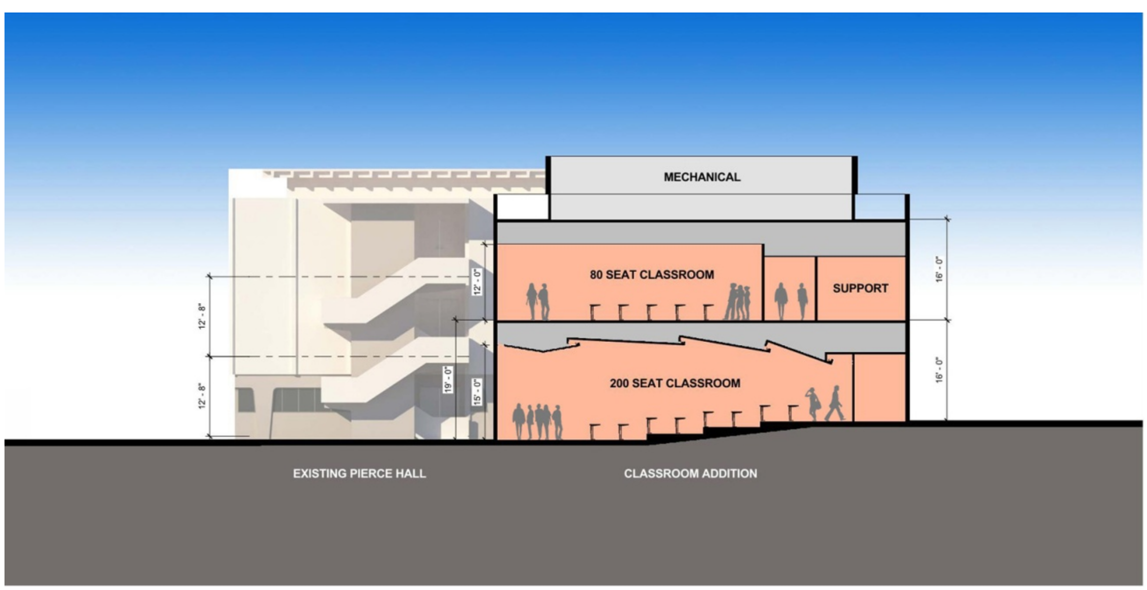
OPTION 4 SITE PLAN



OPTION 4 FIRST FLOOR - 120 SEATS



OPTION 4 SECOND FLOOR - 80 SEATS



SECTION LOOKING SOUTH – OPTION 4

Option 5

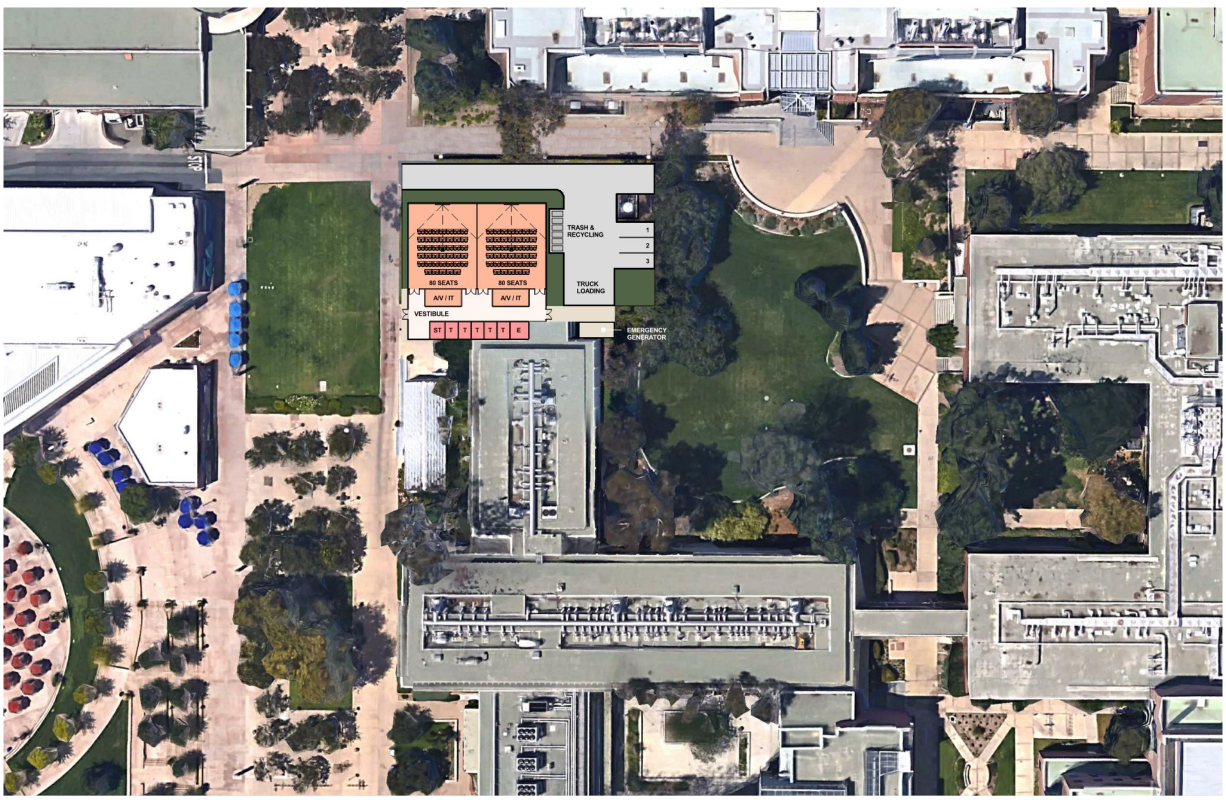
One story with two 80 seat reconfigurable classrooms. The reconfigurable classrooms allow for interactive learning with movable seats and stations, and multi-point audio/visual locations for non-linear presentations and student interaction.

Pros:

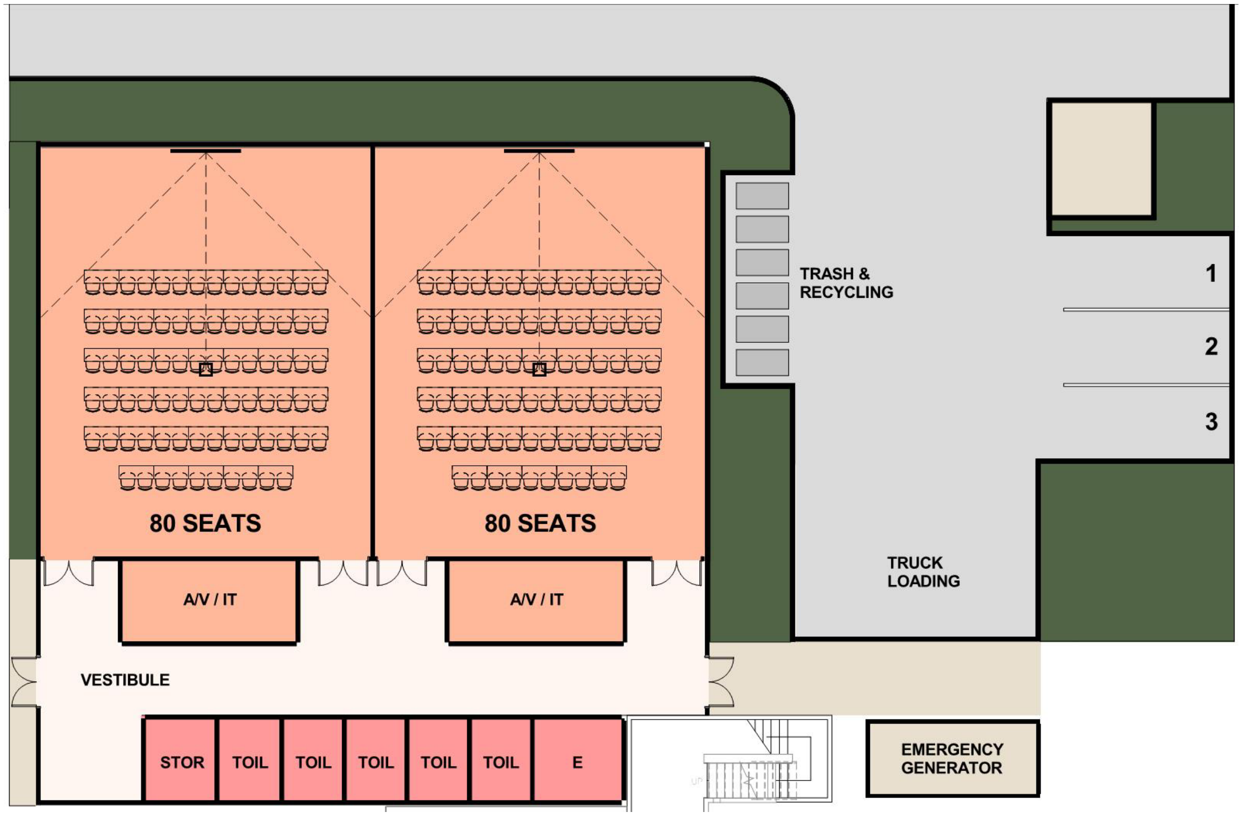
- Provides two reconfigurable classrooms with a total of 160 seats.
- Addition fits within reconfigured Loading Dock area.
- Orients main entry West, towards Commons Mall.
- Interconnects with existing Pierce Hall First Floor.
- Conforms to UCR Program of 6,600 GSF.

Cons

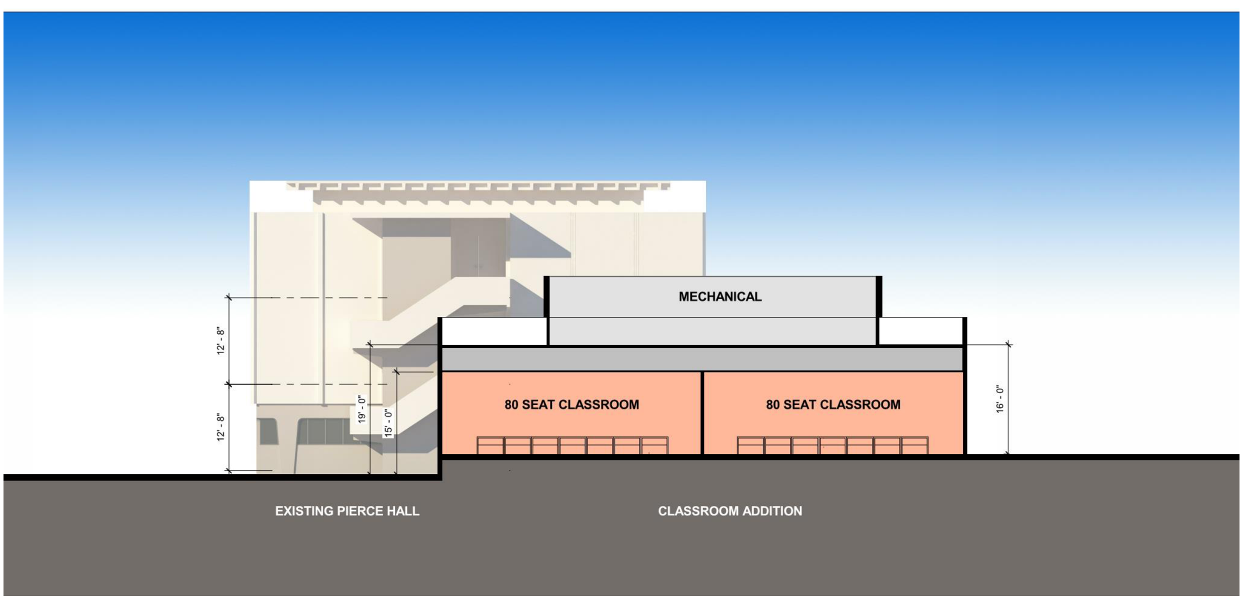
- Does not provide 200 seat lecture hall style classroom.
- One story building underutilizes the land area at a critical campus core location.



OPTION 5 SITE PLAN



OPTION 5 FIRST FLOOR- 160 SEATS



SECTION LOOKING SOUTH - OPTION 5

Options Comparison

The following matrix provides a comparison of the five options developed. Each option identifies the number of stories, number of seats, assignable area, gross area and the estimated cost of construction.

The site work for all options assumes a loading dock program consistent with Appendix H, a total area of 15,000 SF, and a budget of $1 million for construction.

Options 1-5 Comparison

OPTION	STORIES	SEATS	ASF/SEAT	BLDG. ASF	BLDG. GSF	EST. COST
Option 1	**1 Story**	200 Seats	20	4,670	6,000	**$4.0M**
Option 2	**2 Story**					
	First Floor	200 Seats	20	4,580	5,400	
	Second Floor	160 Seats	22	4,380	5,600	
Total				8,960	11,000	**$10M**
Option 3	**2 Story**					
	First Floor	120 Seats	22	3,140	4,000	
	Second Floor	80 Seats	25	2,440	3,300	
Total				5,580	7,300	**$7.9M**
Option 4	**2 Story**					
	First Floor	120 Seats	22	3,140	4,000	
	Second Floor	80 Seats + Support	25	3,140	4,000	
Total				6,280	8,000	**$8.2M**
Option 5	**1 Story**	160 Seats	25	4,670	6,000	**$4.0M**

12.7 CONCLUSIONS:

- The classroom addition will fit within the preferred location, north of Pierce Hall, and east of the loading dock.

- The reconfigured loading dock will accommodate the classroom addition, and the widening of the east west pedestrian route, north of the loading dock.

- The classroom addition options provide for entry orientation to Commons Mall and interconnection with existing Pierce Hall.

- Option 1 provides lecture hall style classroom of 200 seats, and conforms to the stated program of 6,600 GSF.

- Options 2, 3, and 4 provide both lecture hall style and flat floor reconfigurable style classrooms; option 2 will provide 360 seats, option 3 & 4 will provide 200 seats each all in a 2-story building. These options provide an opportunity for maximizing land utilization at a critical campus location.

- Option 5 provides 2 – 80 seat flat floor reconfigurable classrooms with a total of 160 seats, and complies with proposed budget.

- Option 1 is the preferred option based on the programmatic need and available funding.

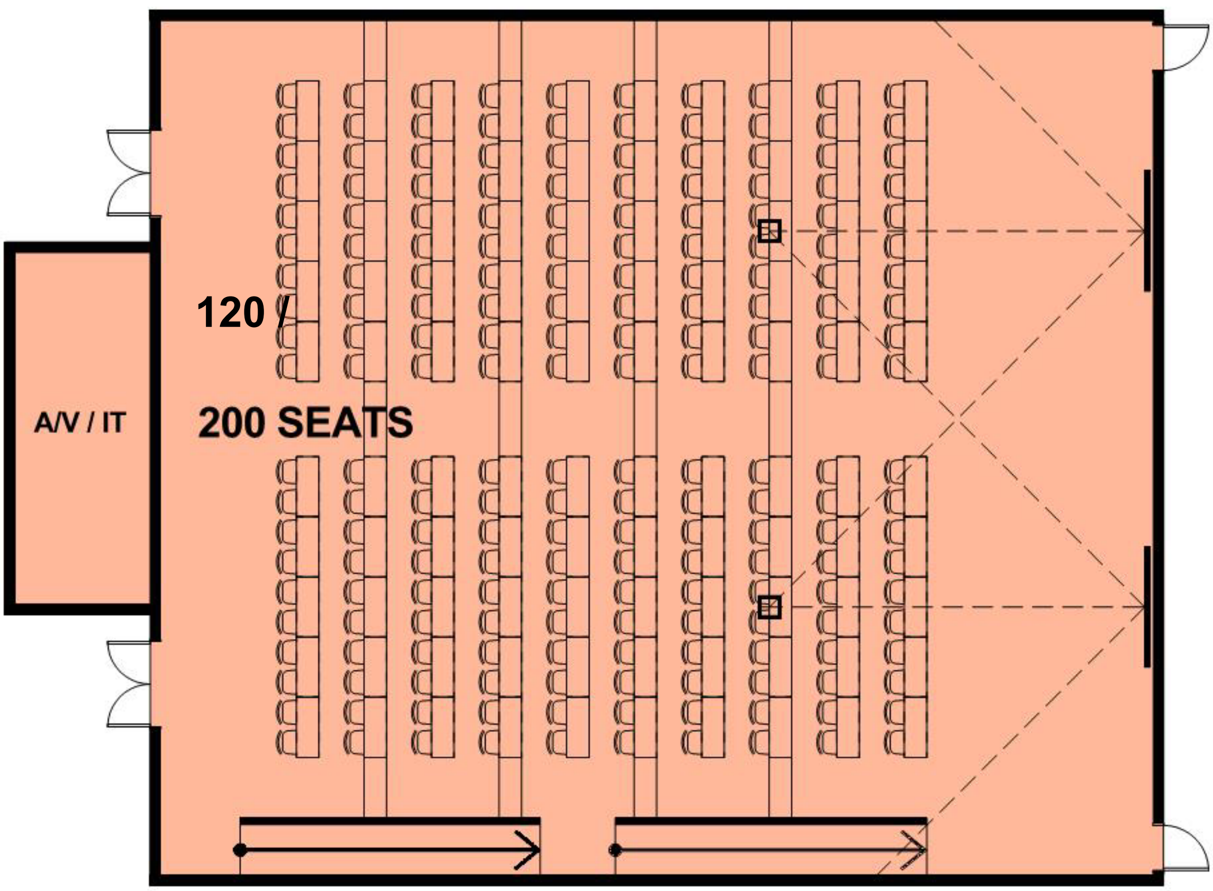
12.8 ROOM DATA SHEETS

Category	Sub-Category	Notes
General		
	Name	**General Assignment Classroom**
	Function	Instructional / Lecture Hall
	Occupancy	B
	Area (Assignable)	20- 25 SF/person
	No. of Occupants	120 or 200
	Adjacencies	Classrooms, restrooms, AV/IT
	Views	None
	Accessibility	At grade west entry, chair lift south entry, interior ramp
	Hours of Use	6am-11pm
	Additional Notes	Entry From Commons Mall
Architectural		
	Ceiling	Acoustical Tile, acoustical ceiling panels
	Ceiling Height	Varies
	Wall Base	Sound attenuation panels
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Carpet
	Base	Rubber Base
	Windows	Insulated glass
	Door Finish & Size	3'-0" x 8'-0" Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	None
	Acoustics	NC 45 or less
	Additional Notes	Floor level flat or steps down
Building Systems		
	Electrical	110v 20a power outlets at wall, and 4 plex floor outlets
	Lighting	indirect LED @ 600 LUX; light switches at door
	Voice and Data	1 Voice, 7 Data at the instruction station, 1 Data on the front wall near ceiling opposite the instructor cabinet, 1 Data on rear wall near ceiling, 1 Wi-Fi.
	Mechanical	Temperature – 68-74 degrees Recirculating air; 6 air changes per hour min. occupied; Pressure-negative to corridor; Humidity-Ambient; 2 air changes per hour min. unoccupied
	Equip. Heat Gain	25 Btuh/SF
	Plumbing	None
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
	Emergency	Fire extinguisher
Furniture / Equip		
	Fixed	Projection Screens / Camera Mount; Whiteboard / Tables (sloped option only)
	Moveable	Chairs (120 or 200)
	Audio/Visual	Projection system

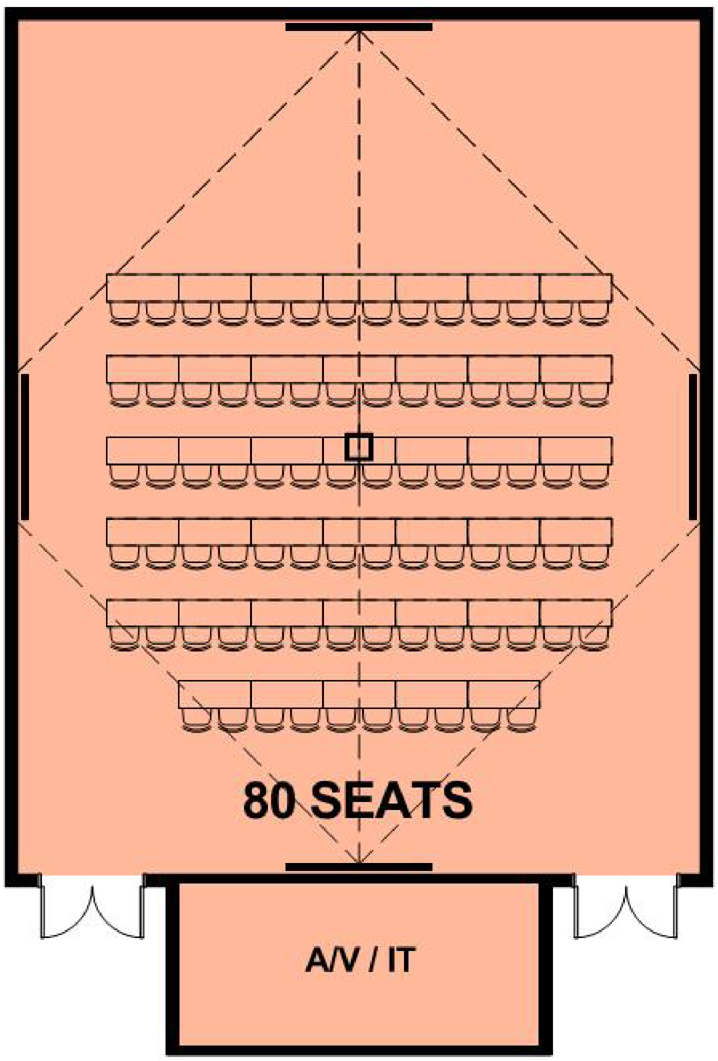
IMPROVEMENTS CLASSROOM ADDITIONS

GENERAL ASSIGNMENT CLASSROOM – 120 OR 200 SEATS

- LECTURE HALL STYLE SEATING
- SLOPED FLAT FLOOR
- FIXED OR MOVABLE TABLES
- MOVEABLE CHAIRS
- VOLUME CEILING
- ADA RAMPS FOR SLOPED FLOORS
- 2 ROWS / TIER
- TECHNOLOGY ENHANCED



Category	Sub-Category	Notes
General		
	Name	**General Assignment Classroom**
	Function	Instructional / Flexible Multi-point Presentation
	Occupancy	B
	Area (Assignable)	25 SF/person
	No. of Occupants	80
	Adjacencies	Classrooms
	Views	None
	Accessibility	Elevator
	Hours of Use	6am-11pm
	Additional Notes	
Architectural		
	Ceiling	Acoustical Tile
	Ceiling Height	10’-0”
	Wall Base	Sound attenuation
	Wall Finish	Gypsum board and enamel paint
	Floor Finish	Carpet
	Base	Rubber Base
	Windows	Insulated glass
	Door Finish & Size	3’-0”x8’-0” Wood Solid Core
	Door Frames	Hollow Metal
	Daylighting	Exterior Windows with light attenuation
	Acoustics	NC 45 or less
	Additional Notes	vibration attenuation
Building Systems		
	Electrical	110v 20a power outlets at wall, and 4 plex floor outlets
	Lighting	indirect LED @ 600 LUX; light switches at door
	Voice and Data	1 Voice, 7 Data at the instruction station, 1 Data on the front wall near ceiling opposite the instructor cabinet, 1 Data on rear wall near ceiling, 1 Wi-Fi
	Mechanical	Temperature – 68-74 degrees Recirculating air; 6 air changes per hour min. occupied; Pressure-negative to corridor; Humidity-Ambient; 2 air changes per hour min. unoccupied
	Equip. Heat Gain	25 Btuh/SF
	Plumbing	None
	Security	Security Key or card reader access
	Fire Protection	Sprinklered
	Telecom/Data	1AP per 1100 SF for wireless coverage
	Emergency	Fire extinguisher
Furniture / Equip		
	Fixed	Projection Screens / camera mount; Whiteboards
	Moveable	Chairs (80); Tables (40)
	Audio/Visual	Projection system

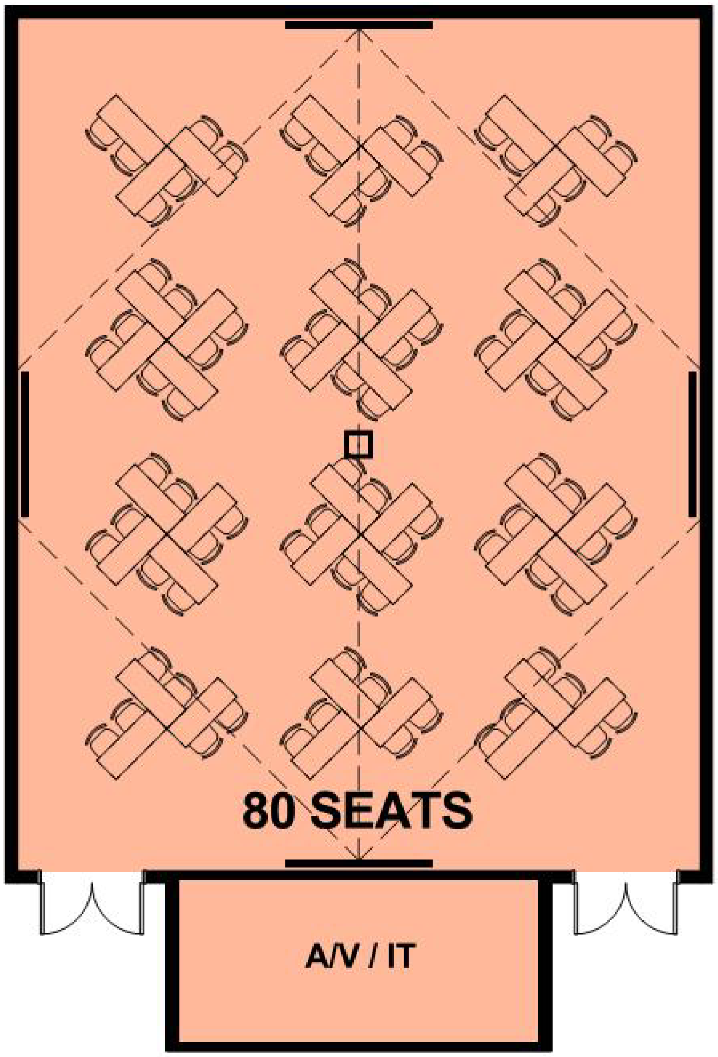


GENERAL ASSIGNMENT CLASSROOM – 80 SEATS

- FLEXIBLE AND RECONFIGURABLE SEATING
- FLAT FLOOR
- MULTI-POINT PRESENTATION
- MOVEABLE TABLES AND SEATS
- TECHNOLOGY ENHANCED

GENERAL ASSIGNMENT CLASSROOM – 80 SEATS

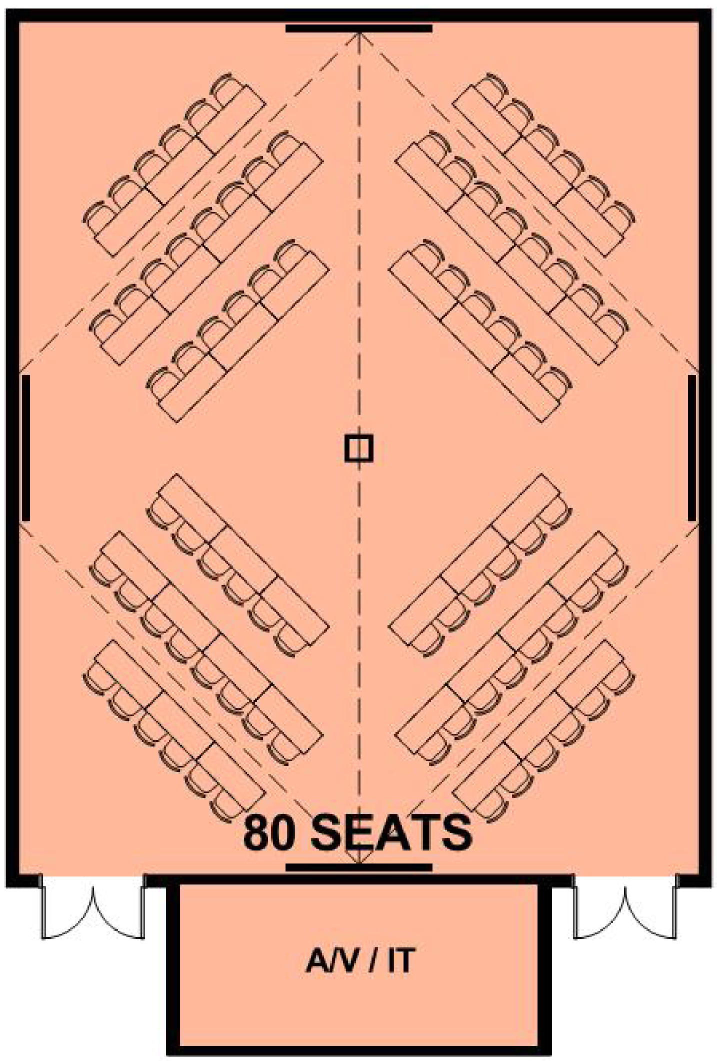
- FLEXIBLE AND RECONFIGURABLE SEATING
- FLAT FLOOR
- MULTI-POINT PRESENTATION
- MOVEABLE TABLES AND SEATS
- TECHNOLOGY ENHANCED



IMPROVEMENTS CLASSROOM ADDITIONS

GENERAL ASSIGNMENT
CLASSROOM – 80 SEATS

- FLEXIBLE AND RECONFIGURABLE SEATING
- FLAT FLOOR
- MULTI-POINT PRESENTATION
- MOVEABLE TABLES AND SEATS
- TECHNOLOGY ENHANCED



13.0

SUSTAINABILITY

OVERVIEW
LEED SCORECARDS

13.1 OVERVIEW

The project will be developed based on the UC-system's sustainability goals, including but not limited to exploring the use of innovation and technology to identify potential contributions toward the 2025 carbon neutrality goal, and the Regent's requirement of LEED Silver. LEED Gold is preferred.

The project will meet the new minimum mandatory requirements of the 2013 Building Energy Efficiency Standards Code, Title 24, Part 6 and Associated Administrative Regulations in Part 1 and UC Green Building Policy. The goal is to exceed Title 24 by 20% and achieve 95% waste diversion rate. The project will also meet *Labs 21* prerequisites that are required by UC Policy, and also consider Green Lab Design to reduce energy consumption, increase water conservation, and divert waste.

Refer to Appendix B for Green Lab Design and Equipment Check List.

The design team will select credits to achieve Silver without relying on EAc2 (On-Site Renewable Energy) and EAc6 (Green Power) and will aim at the UC system goal to reduce its potable water consumption by 36% from 2013 levels. The team will also work towards meeting the 2 point requirement for water efficiency,

13.2 LEED SCORECARDS

The design team developed the scorecards to evaluate potential points to achieve a minimum of LEED Silver rating as required by UCR; individual scorecards were developed for the Classroom Addition and Pierce Hall Improvement. The rating system selected for both projects is based on complete construction, which is applicable to new buildings or to buildings that are undergoing major renovations.

The Classroom Addition scorecard reflects 55 yes points and 32 maybe points. Although this is border line between Gold and Silver, there is potential to rate the building LEED Gold, if all the yes point and some maybe points can be implemented.

The Pierce Hall Improvement scorecard reflects 59 yes and 29 maybe points. The design team will work to achieve a Gold rating.

LEED 2009 for New Construction and Major Renovations

UCR Pierce Hall Renovation

Project Checklist

Y	?	N	Sustainable Sites		Possible Points: 26
9	11	6			
Y			Prereq 1	Construction Activity Pollution Prevention	
		1	Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
	6		Credit 4.1	Alternative Transportation—Public Transportation Access	6
	1		Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
	3		Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
		1	Credit 5.2	Site Development—Maximize Open Space	1
		1	Credit 6.1	Stormwater Design—Quantity Control	1
		1	Credit 6.2	Stormwater Design—Quality Control	1
	1		Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
1			Credit 8	Light Pollution Reduction	1

Y	?	N	Water Efficiency		Possible Points: 10
5	1	4			
Y			Prereq 1	Water Use Reduction—20% Reduction	
1	1	2	Credit 1	Water Efficient Landscaping	2 to 4
2			Credit 2	Innovative Wastewater Technologies	2
2		2	Credit 3	Water Use Reduction	2 to 4

Y	?	N	Energy and Atmosphere		Possible Points: 35
15	9	10			
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
9		10	Credit 1	Optimize Energy Performance	1 to 19
	7		Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
1			Credit 4	Enhanced Refrigerant Management	2
3			Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

Y	?	N	Materials and Resources		Possible Points: 14
8	6				
Y			Prereq 1	Storage and Collection of Recyclables	
1	2		Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
1			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
1	1		Credit 3	Materials Reuse	1 to 2

Y	?	N	Materials and Resources, Continued		
1	1		Credit 4	Recycled Content	1 to 2
	2		Credit 5	Regional Materials	1 to 2
1			Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

Y	?	N	Indoor Environmental Quality		Possible Points: 15
12	2	1			
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
1			Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
	1		Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
1			Credit 7.2	Thermal Comfort—Verification	1
	1		Credit 8.1	Daylight and Views—Daylight	1
		1	Credit 8.2	Daylight and Views—Views	1

Y	?	N	Innovation and Design Process		Possible Points: 6
6					
1			Credit 1.1	Innovation in Design: EP MRc2 95% reduction	1
1			Credit 1.2	Innovation in Design: EP WEc3 with 45% reduction	1
1			Credit 1.3	Innovation in Design: EP MRc7 Certified Wood	1
1			Credit 1.4	Innovation in Design: Specific Title	1
1			Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1

Y	?	N	Regional Priority Credits		Possible Points: 4
4					
1			Credit 1.1	Regional Priority: EAc2	1
1			Credit 1.2	Regional Priority: SSc7.1	1
1			Credit 1.3	Regional Priority: WEc2 at 40%	1
1			Credit 1.4	Regional Priority: IEQc8.1 or WEc3	1

Y	?	N	Total		Possible Points: 110
59	29	21			

Certified 40 to 49 points   Silver 50 to 59 points   Gold 60 to 79 points   Platinum 80 to 110

LEED 2009 for New Construction and Major Renovations

UCR Pierce Hall New Classroom

Project Checklist

Sustainable Sites — Possible Points: 26

Y	?	N				Points
10	11	5		Sustainable Sites		26
Y			Prereq 1	Construction Activity Pollution Prevention		
		1	Credit 1	Site Selection		1
5			Credit 2	Development Density and Community Connectivity		5
		1	Credit 3	Brownfield Redevelopment		1
	6		Credit 4.1	Alternative Transportation—Public Transportation Access		6
	1		Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms		1
	3		Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles		3
2			Credit 4.4	Alternative Transportation—Parking Capacity		2
		1	Credit 5.1	Site Development—Protect or Restore Habitat		1
		1	Credit 5.2	Site Development—Maximize Open Space		1
		1	Credit 6.1	Stormwater Design—Quantity Control		1
1			Credit 6.2	Stormwater Design—Quality Control		1
	1		Credit 7.1	Heat Island Effect—Non-roof		1
1			Credit 7.2	Heat Island Effect—Roof		1
1			Credit 8	Light Pollution Reduction		1

Water Efficiency — Possible Points: 10

Y	?	N			Points
4	2	4		Water Efficiency	10
Y			Prereq 1	Water Use Reduction—20% Reduction	
		4	Credit 1	Water Efficient Landscaping	2 to 4
2			Credit 2	Innovative Wastewater Technologies	2
2	2		Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y	?	N			Points
14	13	8		Energy and Atmosphere	35
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
9	2	8	Credit 1	Optimize Energy Performance	1 to 19
	7		Credit 2	On-Site Renewable Energy	1 to 7
1	1		Credit 3	Enhanced Commissioning	2
1	1		Credit 4	Enhanced Refrigerant Management	2
3			Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y	?	N			Points
5	3	6		Materials and Resources	14
Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			Points
1	1		Credit 4	Recycled Content	1 to 2
	2		Credit 5	Regional Materials	1 to 2
1			Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y	?	N			Points
13	2			Indoor Environmental Quality	15
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
1			Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
1			Credit 7.2	Thermal Comfort—Verification	1
	1		Credit 8.1	Daylight and Views—Daylight	1
	1		Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

Y	?	N			Points
6				Innovation and Design Process	6
1			Credit 1.1	Innovation in Design: EP MRc2 95% reduction	1
1			Credit 1.2	Innovation in Design: EP WEc3 with 45% reduction	1
1			Credit 1.3	Innovation in Design: EP MRc7 Certified Wood	1
1			Credit 1.4	Innovation in Design: Specific Title	1
1			Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

Y	?	N			Points
3	1			Regional Priority Credits	4
1			Credit 1.1	Regional Priority: EAc2	1
	1		Credit 1.2	Regional Priority: SSc4.1	1
1			Credit 1.3	Regional Priority: WEc2 at 40%	1
1			Credit 1.4	Regional Priority: WEc3	1

Total — Possible Points: 110

Y	?	N		Points
55	32	23	Total	110

Certified 40 to 49 points   Silver 50 to 59 points   Gold 60 to 79 points   Platinum 80 to 110

14.0

SCHEDULE

OVERVIEW
DESIGN PHASE
CONSTRUCTION PHASE
PROJECT SCHEDULE

14.1 OVERVIEW

The design duration is anticipated to be 12 months. Assuming a schematic design phase start date of mid-October 2016, the estimated start of construction is early February 2018.

The building improvements and classroom addition and site work are anticipated to be delivered in two phases with a completion target date of mid-August 2020.

14.2 DESIGN PHASE

This period includes 2½ months for Schematic Design, 4 months for Design Development and 6 months for the Construction Document Phase. A month is allotted between each design phase for cost estimate reconciliation and UCR's review. The team anticipates 1 month for Agency review and UCR final approval before the project goes out to bid. The project bid period is anticipated to be 3 months, including advertisement, bidding and contract award.

14.3 CONSTRUCTION PHASE

This project will be constructed in 2 phases with an overall duration of 30 months.

- Phase 1 - 12 months
    - North Wing:
        - 3 floors and Basement MEP infrastructure
        - Full renovation of first and second floor for Instructional Labs and third floor for research labs and support.
    - South Wing:
        - 2 floors and Basement MEP infrastructure.
    - Classroom Addition and Loading Dock

- Phase 2 - 18 months
    - Center Wing
        - 3 floors and Basement MEP infrastructure.
        - Full renovation of a portion of the first floor for instructional labs and support.

Refer to Project Schedule in this Section.

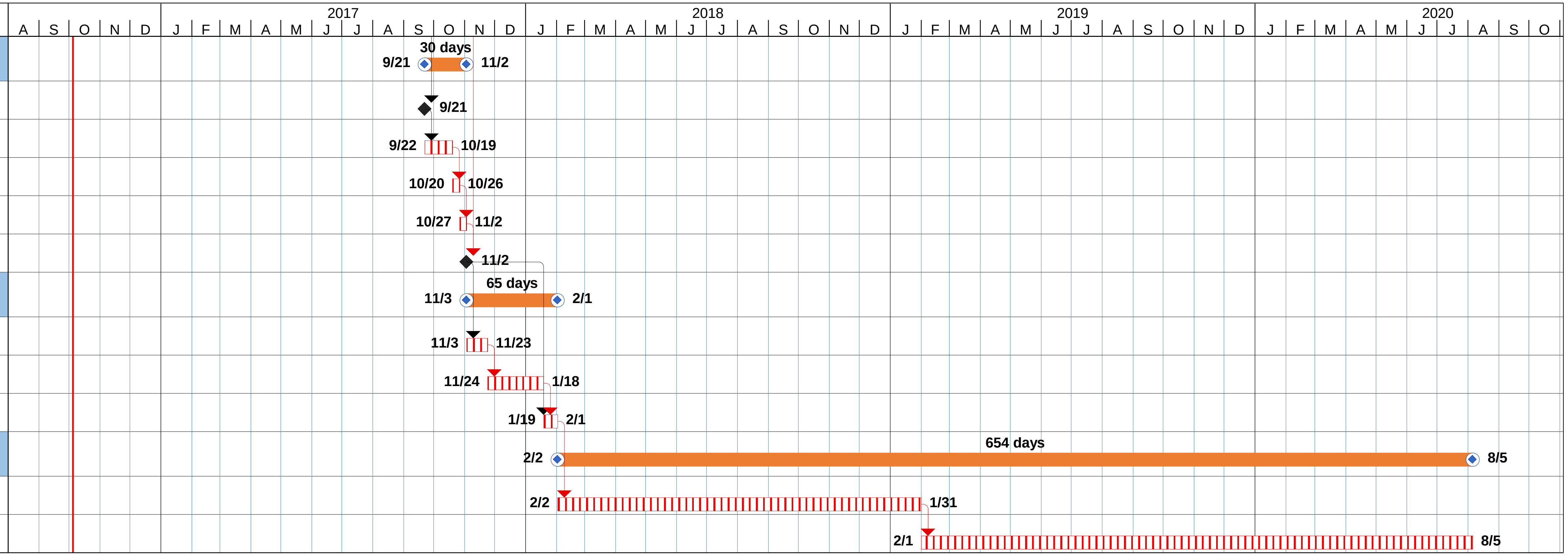
UCR Pierce Hall Classroom Addition & Building Renovation

Phase 2 Basic Services

ID	Task Name	Start	Finish	Duration
1	**PHASE 2: Basic Services**	10/17	8/5	993 days
2	**Schematic Design**	10/17	1/17	67 days
3	Notice to Proceed	10/17		
4	Classroom Design	10/17	11/4	
5	Infrastructure Design	10/17	11/4	
6	**Design Review Meeting #6: Classroom & Infrastructure**	11/7	11/7	
7	Production & Design	11/8	12/5	
8	**Design Review Meeting #7: Classroom & Infrastructure**	12/6	12/6	
9	Production & Design	12/7	12/27	
10	Cost Estimating	12/14	12/27	
11	Cost Reconciliation	12/28	1/17	
12	**Owner Review & Authorization to Proceed**	12/28	1/17	
13	**Design Development**	1/18	5/18	87 days
14	Production & Design	1/18	2/21	
15	**Design Review Meeting #8: Laboratory Renovation**	2/22	2/22	
16	Production & Design	2/23	3/22	
17	**Design Review Meeting #9: Laboratory Renovation**	3/23	3/23	
18	Production	3/24	4/27	
19	Cost Estimating	4/14	4/27	
20	Cost Reconciliation	4/28	5/18	
21	**Owner Review & Authorization to Proceed**	4/28	5/18	
22	**Construction Documents**	5/19	11/2	120 days
23	Production	5/19	7/20	
24	50% Submittal	7/20		
25	Production	7/21	9/21	
26	90% Submittal	9/21		
27	Production	9/22	10/12	
28	Cost Estimate	9/22	10/12	
29	Estimate Reconciliation	10/13	11/2	

UCR Pierce Hall Classroom Addition & Building Renovation
Phase 2 Basic Services

ID	Task Name
30	**Agency Review**
31	Submittal
32	Plan Review
33	Document Revisions
34	Back Check & Verification
35	Plan Approval
36	**Bidding & Award**
37	Advertisement
38	Bidding
39	Award
40	**Construction**
41	Phase 1: North Wing 3 Floors, Basement, MEP; South Wing 2 floors, Basement, MEP; Classroom Addition & Loading Dock
42	Phase 2: Center Wing all floors, Basement, MEP



15.0

COST ESTIMATE

OVERVIEW
CONCEPT COST MODEL

15.1 OVERVIEW

The project cost model dated August 16, 2016 was developed based on the outcome of the programming effort during the workshops with the Working Group.

This Rough Order of Magnitude was developed based on historical guidelines for lab buildings of similar size and type and includes a specific regional cost factor. The estimate assumes a full renovation of areas and specific program for improvements in the Instructional and Research Laboratories.

The Phasing Summary in Page 2 identifies 4 phasing options; the highlighted two-phased option is the preferred option. This assumes a construction duration of 30 months with an anticipated construction start of early February 2018, a mid-point of construction for mid-April 2019 and a completion target date of August 2020.

Concept Cost Model identifies the assumed escalation to the mid-point of construction at an annual rate of 4%.

Refer to Cost Concept Model in this Section.

C. P. O'HALLORAN ASSOCIATES INC.
CONSTRUCTION COST MANAGEMENT

CONCEPT COST MODEL
CONSTRUCTION ESTIMATE

for

Pierce Hall Renovation and Classroom Addition
University of California Riverside

Prepared for :

RBB Architects Inc.
10980 Wilshire Boulevard
Los Angeles, CA 90024

August 16, 2016

 # 16-2443

Concept Cost Model Construction Estimate

Basis of Estimate

The estimate is based on draft DPP program areas and narratives received June 2016. Estimated unit costs include average labor rates with prevailing wages and competitive bid conditions. Competitive bid conditions generally occur when bids are received from a minimum of four general contractors and three subcontractors for each trade. The estimate includes allowances and assumptions for materials, building systems, specifications and construction schedule, these assumptions should be confirmed at the next design stage and prior to completion of bid documents. The estimate includes general contractor markups for general conditions, bonds, insurances, profit, contingency and cost escalation to mid-point of construction. Project soft costs are not included. The estimate is based on design, bid, build project delivery.

The estimated construction cost represents our best judgment as a professional consultant familiar with the construction industry. We have no control over the cost or supply of labor, materials and equipment, a contractor's methods of determining bid prices and market conditions. We cannot and do not warranty or represent that bids or negotiated prices will not vary from the estimated construction cost.

Estimate Exclusions

Professional design, testing, inspection and management fees.
Fire and all risk insurance.
Legal and financing costs.
Building permits and fees.
Construction, project, owner and staging contingencies.
Communications, security and technology equipment and cabling.
Furnishings, workstations and moveable equipment.
Owner furnished equipment.
Moving, furnishings and equipment relocation.

Phasing Summary			One Phase	Two Phase	Three Phase	Six Phase
1	Classroom Addition 6,500 SF Single Level Option		$3,535,420	$3,535,420	$3,535,420	$3,535,420
2	Site, Loading Dock		$885,000	$885,000	$885,000	$885,000
3	North Wing Shell and Core		$4,573,775	$4,573,775	$4,573,775	$4,573,775
4	North Wing TI		$5,308,755	$5,308,755	$5,308,755	$5,308,755
5	South Wing - Shell & Core		$4,725,732	$4,725,732	$4,725,732	$4,725,732
6	South Wing TI		$3,266,955	$3,266,955	$3,266,955	$3,266,955
7	Center Wing - Shell & Core		$10,217,879	$10,217,879	$10,217,879	$10,217,879
8	Center Wing TI		$11,604,857	$11,604,857	$11,604,857	$11,604,857
9	Temporary HVAC and Phasing					$3,206,250
	SUBTOTAL		$44,118,373	$44,118,373	$44,118,373	$47,324,623
10	General Contractor General Conditions, Insurances, Bonds, Overhead, Profit	16.7%	$7,362,474	$7,362,474	$7,362,474	$7,897,533
11	Design / Estimate Contingency	10.0%	$5,148,085	$5,148,085	$5,148,085	$5,522,216
	SUBTOTAL		$56,628,931	$56,628,931	$56,628,931	$60,744,371
12	Cost Escalation to Mid-Point of Construction @ 4% Per Year		$5,662,893	$6,229,182	$7,928,050	$9,111,656
	TOTAL CONSTRUCTION ESCALATED		$62,291,824	$62,858,114	$64,556,982	$69,856,027
	Alternate Additional Cost incl. GC Markups, Contingency and Cost Escalation for Expanded Classroom Building, 2 Levels 11,000 GSF total in lieu of 6,500 SF single level.			$3,600,000		

	Cost by PPG Category - Two Phase Project		MEP Replacement	ADA Upgrades	Roofing	Title 24 Windows	Tenant Improvements	Classroom, Site & Loading Dock	Total
1	Classroom Addition 6,500 SF Single Level Option							$3,535,420	$3,535,420
2	Site, Loading Dock							$885,000	$885,000
3	North Wing Shell and Core		$2,990,789	$990,184	$255,873	$336,929			$4,573,775
4	North Wing TI						$5,308,755		$5,308,755
5	South Wing - Shell & Core		$2,878,142	$878,722	$420,279	$548,590			$4,725,732
6	South Wing TI						$3,266,955		$3,266,955
7	Center Wing - Shell & Core		$6,674,870	$2,395,824	$562,465	$584,720			$10,217,879
8	Center Wing TI						$11,604,857		$11,604,857
	SUBTOTAL		$12,543,801	$4,264,729	$1,238,617	$1,470,239	$20,180,567	$4,420,420	$44,118,373
9	General Contractor General Conditions, Insurances, Bonds, Overhead, Profit	16.7%	$2,093,309	$711,698	$206,700	$245,353	$3,367,733	$737,680	$7,362,474
10	Design / Estimate Contingency	10.0%	$1,463,711	$497,643	$144,532	$171,559	$2,354,830	$515,810	$5,148,085
	SUBTOTAL		$16,100,821	$5,474,070	$1,589,849	$1,887,152	$25,903,129	$5,673,910	$56,628,931
11	Cost Escalation to Mid-Point of Construction @ 4% Per Year		$1,771,090	$602,148	$174,883	$207,587	$2,849,344	$624,130	$6,229,182
	TOTAL CONSTRUCTION ESCALATED		$17,871,912	$6,076,218	$1,764,732	$2,094,738	$28,752,474	$6,298,040	$62,858,114
	Alternate Additional Cost incl. GC Markups, Contingency and Cost Escalation for Expanded Classroom Building, 2 Levels 11,000 GSF total in lieu of 6,500 SF single level.								$3,600,000

Concept Construction Estimate - Two Phase Project		Classroom Addition, Site, Loading Dock		North Wing Shell and Core		North Wing TI		South Wing Shell and Core		South Wing TI		Center Wing Shell and Core		Center Wing TI		Total	
		6,500 GSF		25,999 GSF		16,209 GSF		26,902 GSF		15,217 GSF		61,459 GSF		36,073 GSF		120,860 GSF	
COMPONENT SUMMARY		$/GSF	$	$/GSF	$	$/GSF	$	$/GSF	$	$/GSF	$	$/GSF	$	$/GSF	$	$ / GSF	$
1. Foundations		24.07	156,454	0.29	7,591	-	-	0.54	14,423	-	-	0.25	15,182	-	-	1.60	193,651
2. Vertical Structure		35.55	231,075	9.55	248,381	-	-	-	-	-	-	5.25	322,895	-	-	6.64	802,351
3. Floor and Roof Structure		77.44	503,360	7.22	187,746	-	-	4.09	110,073	-	-	6.06	372,671	-	-	9.71	1,173,850
4. Exterior Cladding		136.19	885,249	12.96	336,929	-	-	20.39	548,590	-	-	9.51	584,720	-	-	19.49	2,355,488
5. Roofing and Waterproofing		24.26	157,713	9.84	255,873	-	-	15.62	420,279	-	-	9.15	562,465	-	-	11.55	1,396,329
Shell (1 - 5)		297.52	1,933,851	39.87	1,036,520	-	-	40.64	1,093,365	-	-	30.23	1,857,934	-	-	49.00	5,921,670
6. Interior Partitions and Doors		25.67	166,849	14.29	371,434	16.49	267,282	13.69	368,179	13.40	203,976	9.18	564,367	13.90	501,433	20.22	2,443,519
7. Interior Finishes - Floors, Walls, Ceilings		45.00	292,500	5.70	148,252	26.00	421,434	7.44	200,259	24.78	377,150	9.54	586,409	26.00	937,898	24.52	2,963,902
Interiors (6 - 7)		70.67	459,349	19.99	519,685	42.49	688,716	21.13	568,438	38.19	581,126	18.72	1,150,777	39.90	1,439,331	44.74	5,407,421
8. Fixed Equipment, Casework and Specialties		37.38	243,000	1.04	27,030	130.91	2,121,873	2.78	74,717	59.39	903,715	3.88	238,566	124.73	4,499,461	67.09	8,108,363
9. Stairs and Elevators		-	-	2.45	63,825	-	-	3.16	85,100	-	-	3.57	219,225	-	-	3.05	368,150
Equipment, Stairs and Elevators (8 - 9)		37.38	243,000	3.49	90,855	130.91	2,121,873	5.94	159,817	59.39	903,715	7.45	457,791	124.73	4,499,461	70.13	8,476,513
10. Plumbing		22.53	146,471	24.42	634,989	59.36	962,092	20.18	542,891	26.25	399,394	21.84	1,342,078	61.21	2,207,862	51.60	6,235,776
11. Heating, Ventilation, Air Conditioning		50.00	325,000	42.39	1,101,981	46.75	757,739	41.39	1,113,353	41.75	635,280	42.39	2,604,972	46.75	1,686,342	68.05	8,224,667
12. Electrical		60.00	390,000	29.24	760,111	46.63	755,846	29.86	803,314	47.73	726,326	29.10	1,788,717	47.73	1,721,809	57.47	6,946,123
13. Fire Protection		5.81	37,750	4.63	120,245	1.39	22,490	4.63	124,422	1.39	21,114	4.63	284,248	1.39	50,051	5.46	660,319
Mechanical and Electrical (10 - 13)		138.34	899,220	100.67	2,617,326	154.12	2,498,166	96.05	2,583,979	117.11	1,782,114	97.95	6,020,015	157.07	5,666,065	182.58	22,066,885
14. Site Preparation and Demolition		9.23	60,000	11.90	309,388	-	-	11.90	320,134	-	-	11.90	731,362	-	-	11.76	1,420,884
15. Site Development		103.85	675,000	-	-	-	-	-	-	-	-	-	-	-	-	5.58	675,000
16. Site Utilities		23.08	150,000	-	-	-	-	-	-	-	-	-	-	-	-	1.24	150,000
Sitework (14 - 16)		136.15	885,000	11.90	309,388	-	-	11.90	320,134	-	-	11.90	731,362	-	-	18.58	2,245,884
SUBTOTAL		680.06	4,420,420	175.92	4,573,775	327.52	5,308,755	175.66	4,725,732	214.69	3,266,955	166.26	10,217,879	321.70	11,604,857	365.04	44,118,373
General Conditions, General Requirements	10.0%	68.01	442,042	17.59	457,377	32.75	530,875	17.57	472,573	21.47	326,696	16.63	1,021,788	32.17	1,160,486	36.50	4,411,837
Bonds and Insurances	2.0%	14.96	97,249	3.87	100,623	7.21	116,793	3.86	103,966	4.72	71,873	3.66	224,793	7.08	255,307	8.03	970,604
Overhead and Profit	4.0%	30.52	198,388	7.90	205,271	14.70	238,257	7.88	212,091	9.64	146,621	7.46	458,578	14.44	520,826	16.38	1,980,033
SUBTOTAL		793.55	5,158,100	205.28	5,337,046	382.18	6,194,680	204.98	5,514,362	250.52	3,812,144	194.00	11,923,038	375.39	13,541,475	425.95	51,480,847
Design / Estimate Contingency	10.0%	79.36	515,810	20.53	533,705	38.22	619,468	20.50	551,436	25.05	381,214	19.40	1,192,304	37.54	1,354,148	42.60	5,148,085
TOTAL CONSTRUCTION 07/2016		872.91	$5,673,910	225.81	$5,870,751	420.39	$6,814,148	225.48	$6,065,799	275.57	$4,193,359	213.40	$13,115,342	412.93	$14,895,623	468.55	$56,628,931
Cost Escalation to Construction Mid Point	11.0%	96.02	624,130	24.84	645,783	46.24	749,556	24.80	667,238	30.31	461,269	23.47	1,442,688	45.42	1,638,518	51.54	6,229,182
TOTAL CONSTRUCTION ESCALATED		968.93	$6,298,040	250.65	$6,516,534	466.64	$7,563,704	250.28	$6,733,036	305.88	$4,654,628	236.87	$14,558,030	458.35	$16,534,141	520.09	$62,858,114

Alternate Additional Cost incl. GC Markups, Contingency and Cost Escalation for Expanded Classroom Building, 2 Levels 11,000 GSF total in lieu of 6,500 SF single level. $3,600,000

Areas	North Wing	South Wing	Center Wing	Total
Gross Building Area				
Lower Basement	-	2,216	6,428	8,644
Upper Basement	4,066	1,737	2,843	8,646
First Floor	7,142	12,396	17,069	36,607
Second Floor	7,332	10,553	17,553	35,438
Third Floor	7,459	-	17,566	25,025
Subtotal	25,999	26,902	61,459	114,360
Classroom Building				6,500
TOTAL GROSS BUILDING AREA				120,860

Assignable Areas				
First Floor Laboratories	5,547	2,835	12,341	20,723
Second Floor Laboratories	5,331	3,136	11,841	20,308
Third Floor Laboratories	5,331	-	11,891	17,222
First Floor Offices	-	5,428	-	5,428
Second Floor Offices	-	3,818	-	3,818
Total	16,209	15,217	36,073	67,499

Classroom Addition 6,500 SF Single Level Option

Component Description	Quantity		Unit Cost	$
1. Foundations				
Earthwork	11,000	SF	5.00	55,000
Reinforced concrete foundations				
Grade beams, column and wall footings	150	CY	625.00	93,750
Foundation drainage	340	LF	22.66	7,704
				$ 156,454
2. Vertical Structure				
Columns				
Steel framing	39	TNS	5,500.00	214,500
Fireproofing steel	39	TNS	425.00	16,575
				$ 231,075
3. Floor and Roof Structure				
Floor at grade				
Reinforced concrete slab on grade	6,500	SF	12.88	83,688
Extra for stepped floor	1	LS	65,000.00	65,000
Roof				
Steel framing	40	TNS	5,500.00	220,000
Fireproofing steel	40	TNS	425.00	17,000
Metal deck, 3" with 3" lightweight concrete fill	6,500	SF	15.97	103,773
Equipment pads	60	SF	15.00	900
Miscellaneous metals and concrete	6,500	SF	2.00	13,000
				$ 503,360

Classroom Addition 6,500 SF Single Level Option

Component Description	Quantity		Unit Cost	$
4. Exterior Cladding				
Wall framing, furring and insulation				
Steel framing	4,500	LBS	4.35	19,575
Steel stud framing	8,500	SF	7.45	63,325
Steel stud furring	8,500	SF	6.60	56,100
Batt insulation	8,500	SF	1.80	15,300
Exterior sheathing	8,500	SF	3.97	33,707
Air barrier / building paper	8,500	SF	2.32	19,699
Rigid insulation	8,500	SF	4.75	40,375
Fire stopping	336	LF	8.24	2,769
Exterior finish	8,500	SF	45.00	382,500
Windows and glazing	1,700	SF	110.00	187,000
Interior finish to exterior wall				
Gypsum board, painted	8,500	SF	5.00	42,500
Exterior doors, frames and hardware	4	EA	4,350.00	17,400
Soffits	200	SF	25.00	5,000
			$	885,249

Classroom Addition 6,500 SF Single Level Option

Component Description	Quantity		Unit Cost	$
5. Roofing and Waterproofing				
Waterproofing	1	LS	10,000.00	10,000
Roofing				
Roof insulation and cover board	6,500	SF	5.70	37,050
Roof membrane and ballast	6,500	SF	11.35	73,775
Roofing upstands and sheet metal	6,500	SF	6.75	43,875
Caulking and sealants	6,500	SF	0.46	3,013
				$ 157,713
6. Interior Partitions and Doors				
Partition framing				
Steel stud framing	5,000	SF	9.00	45,000
Fire safing	350	LF	8.24	2,884
Backing plates	400	LF	7.47	2,987
Partition surfacing				
Gypsum board, painted	10,000	SF	5.00	50,000
Sound insulation				
Batt insulation	5,000	SF	1.65	8,250
Caulk sound partition	700	LF	1.85	1,298
Interior windows, sidelights and transoms	150	SF	115.00	17,250
Interior doors, frames and hardware	12	EA	3,265.00	39,180
				$ 166,849

Classroom Addition 6,500 SF Single Level Option

Component Description	Quantity		Unit Cost	$
7. Interior Finishes - Floors, Walls, Ceilings				
Allowance	6,500	SF	45.00	292,500
				$ 292,500
8. Function Equipment, Casework and Specialties				
Allowance	6,500	SF	22.00	143,000
Auditorium seating	200	EA	500.00	100,000
				$ 243,000
9. Stairs and Elevators				
				$ -
10. Plumbing				
Sanitary fixtures and connection piping	13	EA	1,850.00	24,050
Sanitary waste, vent and service piping				
Fixture rough-in	13	EA	3,900.00	50,700
Floor drains and sinks	5	EA	1,885.00	9,425
Hose bibbs	1	EA	1,030.00	1,030
Water heating equipment	1	LS	22,000.00	22,000

Classroom Addition 6,500 SF Single Level Option

Component Description	Quantity		Unit Cost	$
10. Plumbing				
Natural gas piping	1	LS	10,000.00	10,000
Rainwater drainage				
Roof and overflow drains	10	EA	764.86	7,649
Piping	300	LF	42.00	12,600
Sub-contractor commissioning	1	LS	5,000.00	5,000
Testing and sterilizing	6,500	SF	0.62	4,017
				$ 146,471
11. Heating, Ventilating and Air Conditioning				
Allowance	6,500	SF	50.00	325,000
				$ 325,000
12. Electrical				
Allowance	6,500	SF	60.00	390,000
				$ 390,000
13. Fire Protection				
Automatic fire sprinkler system				
Enclosed area, wet system	6,500	SF	5.67	36,823
Covered area	200	SF	4.64	927
				$ 37,750

Classroom Addition 6,500 SF Single Level Option

Component Description	Quantity		Unit Cost		$
14. Site Preparation					
Site cleating and grading	15,000	SF	4.00		60,000
				$	60,000
15. Site Development					
Site improvements and loading dock	15,000	SF	45.00		675,000
				$	675,000
16. Site Utilities					
Allowance	15,000	SF	10.00		150,000
				$	150,000

North Wing - Shell & Core

Component Description	Quantity		Unit Cost		$
1. Foundations					
Foundation drainage	362	LF	20.96		7,591
				$	7,591
2. Vertical Structure					
Enlarge door opening in existing reinforced concrete shear wall	20	EA	12,419.05		248,381
				$	248,381
3. Floor and Roof Structure					
Slab repairs at locations of new utilities, equipment and openings					
Lowest floor	7,142	SF	3.24		23,122
Upper floor	25,999	SF	3.70		96,196
Roof	10,159	SF	2.78		28,191
Equipment pads	250	SF	16.65		4,163
Miscellaneous metals, concrete and anchorage	25,999	SF	1.39		36,074
				$	187,746
4. Exterior Cladding					
Wall furring and insulation - existing					-
Exterior finish repairs	11,700	SF	4.63		54,113
Rooftop equipment screen - none					-

North Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
4. Exterior Cladding				
Exterior windows	2,127	SF	106.38	226,206
Exterior doors	6	EA	4,023.75	24,143
Interior finish to exterior wall, patch and repair	11,700	SF	2.78	32,468
				$ 336,929
5. Roofing and Waterproofing				
Waterproofing				
Exterior wall	900	SF	9.94	8,949
Slabs - none			-	-
Roofing				
Roof insulation and cover board	10,159	SF	6.24	63,430
Membrane roofing	10,159	SF	10.64	108,066
Walkway pads	10,159	SF	0.28	2,819
Roofing upstands and sheet metal	10,159	SF	6.08	61,786
Caulking and sealants	25,999	SF	0.42	10,822
				$ 255,873
6. Interior Partitions and Doors				
Corridor walls				
Repairs	1	LS	65,000.00	65,000
One hour rated	2,070	SF	23.45	48,539
Two hour shaft	4,140	SF	30.06	124,459
Interior windows, sidelights and transoms	207	SF	106.38	22,020
Interior doors, frames and hardware	35	EA	2,650.13	92,754

North Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
6. Interior Partitions and Doors				
				-
Elevator smoke curtains - none				
Access panels walls and ceilings	15	EA	615.13	9,227
Card reader door hardware	15	EA	629.00	9,435
				$ 371,434
7. Interior Finishes - Floors, Walls, Ceilings				
Corridors and circulation	5,724	SF	25.90	148,252
Toilet rooms				-
Basement level mechanical rooms - none				-
				$ 148,252
8. Function Equipment, Casework and Specialties				
Protective wall guards and protection	9,790	SF	2.00	19,580
Toilet partitions and accessories				-
Casework and countertops				
Toilet rooms				-
Code signage	9,790	SF	0.51	4,981
Roller shades, exterior windows				-

North Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
8. Function Equipment, Casework and Specialties				
Fixed equipment				
Fire extinguishers	6	EA	411.63	2,470
			$	27,030
9. Stairs and Elevators				
Staircase flights, floor to floor				
ADA upgrades, riser closure, handrails and nosings	3	EA	21,275.00	63,825
Elevators				
Modernization				-
ADA upgrades				-
			$	63,825
10. Plumbing				
Sanitary fixtures and connection piping				-
Sanitary waste, vent and service piping and pumps	25,999	SF	4.63	120,245
New water meters, pressure regulating assemblies and back flow preventers	1	LS	13,875.00	13,875
Water heating equipment, pumps and tanks	25,999	SF	1.20	31,264
Natural gas piping				
Earthquake valve	1	EA	10,424.75	10,425
Gas regulator assembly	1	EA	5,633.25	5,633
Piping	400	LF	48.10	19,240
Valves and connections	1	LS	4,625.00	4,625

North Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
10. Plumbing				
Laboratory gas piping and equipment				
Laboratory acid waste system	25,999	SF	6.71	174,356
Laboratory vacuum	1	EA	53,650.00	53,650
Laboratory air compressor	1	EA	78,625.00	78,625
Rainwater drainage				
Roof and overflow drains	25	EA	707.50	17,969
Piping	1,463	LF	39.78	58,187
Sub-contractor commissioning	25,999	SF	0.93	24,049
Testing and sterilizing	25,999	SF	0.88	22,847
			$	634,989
11. Heating, Ventilating and Air Conditioning				
Heat generation and cooling equipment and pumps	25,999	SF	4.16	108,221
Piping and insulation	25,999	SF	5.00	129,995
Air handling equipment	25,999	SF	10.64	276,564
Ventilation equipment	25,999	SF	4.16	108,221
Air distribution	25,999	SF	11.10	288,589
Diffusers, registers and grilles	25,999	SF	1.39	36,074
Controls	25,999	SF	3.50	90,997
Sub-contractor commissioning	25,999	SF	1.39	36,074
Testing and balancing	25,999	SF	1.05	27,248
			$	1,101,981

North Wing - Shell & Core

Component Description	Quantity		Unit Cost		$
12. Electrical					
Main power and distribution	25,999	SF	5.00		129,995
Emergency and UPS power	25,999	SF	2.78		72,147
Equipment connections and switches	25,999	SF	1.50		38,999
Power, panel boards, feeders and outlets	25,999	SF	5.50		142,995
Lighting					
Fixtures, conduit and cable	9,790	SF	18.00		176,220
Switches, conduit and wire	9,790	SF	1.85		18,112
Occupancy sensors	9,790	SF	1.39		13,584
Daylight sensors and lighting controls	9,790	SF	2.54		24,903
Audio visual conduit			-		-
Communications conduit and cable	25,999	SF	1.50		38,999
Fire alarm system	25,999	SF	2.54		66,135
Security system	25,999	SF	1.00		25,999
Sub-contractor commissioning	25,999	SF	0.46		12,025
				$	760,111
13. Fire Protection					
Automatic fire sprinkler system	25,999	SF	4.63		120,245
				$	120,245

North Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
<u>14. Site Preparation and Selective Demolition</u>				
Site protective construction, dust and noise control	25,999	SF	1.39	36,074
Selective interior demolition				
Structural	25,999	SF	1.16	30,061
Exterior windows	25,999	SF	0.93	24,049
Exterior doors	25,999	SF	0.46	12,025
Roofing	25,999	SF	0.93	24,049
Interiors	25,999	SF	2.00	51,998
Fixed equipment and casework	25,999	SF	1.62	42,086
Debris removal	25,999	SF	0.93	24,049
Hazardous material abatement	25,999	SF	2.50	64,998
			$	309,388

North Wing - Tenant Improvements

Component Description	Quantity	Unit Cost	$

1. Foundations

		$	-

2. Vertical Structure

		$	-

3. Floor and Roof Structure

		$	-

4. Exterior Cladding

		$	-

5. Roofing and Waterproofing

		$	-

North Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
6. Interior Partitions and Doors				
Interior walls				
One hour rated	6,480	SF	23.45	151,948
Interior windows, sidelights and transoms	243	SF	106.38	25,849
Interior doors, frames and hardware	30	EA	2,650.13	79,504
Elevator smoke curtains - none				-
Access panels walls and ceilings	6	EA	615.13	3,691
Card reader door hardware	10	EA	629.00	6,290
			$	267,282
7. Interior Finishes - Floors, Walls, Ceilings				
Laboratory program	16,209	SF	26.00	421,434
			$	421,434
8. Function Equipment, Casework and Specialties				
Protective wall guards and protection	16,209	SF	1.00	16,209
Toilet partitions and accessories				-
Laboratory casework and equipment	16,209	SF	100.00	1,620,900
Fume hoods 5'	27	EA	14,568.75	393,356
Fume hoods 8'	4	EA	17,868.75	71,475
Code signage	16,209	SF	0.93	14,993

North Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
8. Function Equipment, Casework and Specialties				
Fire extinguishers	12	EA	411.63	4,940
				$ 2,121,873
9. Stairs and Elevators				
				$ -
10. Plumbing				
Sanitary fixtures and connection piping				
Laboratory fixtures and equipment hook-ups	16,209	SF	2.04	32,985
Sanitary waste, vent and service piping				-
Water heating equipment, pumps and tanks				-
Natural gas piping				-
Laboratory gas piping and equipment	16,209	SF	55.50	899,600
Rainwater drainage				-
Sub-contractor commissioning	16,209	SF	1.25	20,241
				-
Testing and sterilizing	16,209	SF	0.57	9,266
				$ 962,092

North Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
11. Heating, Ventilating and Air Conditioning				
Heat generation and cooling equipment and pumps	16,209	SF		-
Piping and insulation	16,209	SF	15.00	243,135
Air handling equipment	16,209	SF	6.00	97,254
Ventilation equipment	16,209	SF	2.00	32,418
Air distribution	16,209	SF	10.00	162,090
Diffusers, registers and grilles	16,209	SF	1.85	29,987
Controls	16,209	SF	9.00	145,881
Sub-contractor commissioning	16,209	SF	1.85	29,987
Testing and balancing	16,209	SF	1.05	16,987
			$	757,739
12. Electrical				
Main power and distribution	16,209	SF		-
Emergency and UPS power	16,209	SF		-
Equipment connections and switches	16,209	SF		-
Power, panel boards, feeders and outlets	16,209	SF	10.00	162,090
Lighting				
Fixtures, conduit and cable	16,209	SF	18.00	291,762
Switches, conduit and wire	16,209	SF	1.85	29,987
Occupancy sensors	16,209	SF	1.39	22,490
Daylight sensors and lighting controls	16,209	SF	2.54	41,232

North Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
12. Electrical				
Audio visual conduit	16,209	SF	0.93	14,993
Communications conduit and cable	16,209	SF	6.00	97,254
Fire alarm system	16,209	SF	3.50	56,732
Security system	16,209	SF	1.50	24,314
Sub-contractor commissioning	16,209	SF	0.93	14,993
			$	755,846
13. Fire Protection				
Automatic fire sprinkler system	16,209	SF	1.39	22,490
			$	22,490
14. Site Preparation and Selective Demolition				
Site protective construction, dust and noise control				-
Selective interior demolition				-
Hazardous material abatement				-
			$	-

South Wing - Shell & Core

Component Description	Quantity		Unit Cost		$
1. Foundations					
Foundation drainage	688	LF	20.96		14,423
				$	14,423
2. Vertical Structure					
Enlarge door opening in existing reinforced concrete shear wall			-		-
				$	-
3. Floor and Roof Structure					
Slab repairs at locations of new utilities, equipment and openings					
Lowest floor	12,396	SF	1.85		22,933
Upper floor	14,506	SF	1.85		26,836
Roof	16,896	SF	1.85		31,258
Equipment pads	250	SF	16.65		4,163
Miscellaneous metals, concrete and anchorage	26,902	SF	0.93		24,884
				$	110,073
4. Exterior Cladding					
Wall furring and insulation - existing					-
Exterior finish repairs	21,450	SF	4.63		99,206
Rooftop equipment screen - none					

South Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
4. Exterior Cladding				
Exterior windows	3,438	SF	106.38	365,717
Exterior doors	6	EA	4,023.75	24,143
Interior finish to exterior wall, patch and repair	21,450	SF	2.78	59,524
				$ 548,590
5. Roofing and Waterproofing				
Waterproofing				
Exterior wall	1,650	SF	9.94	16,407
Slabs - none			-	-
Roofing				
Roof insulation and cover board	16,896	SF	6.24	105,494
Membrane roofing	16,896	SF	10.64	179,731
Walkway pads	16,896	SF	0.28	4,689
Roofing upstands and sheet metal	16,896	SF	6.08	102,759
Caulking and sealants	26,902	SF	0.42	11,198
				$ 420,279
6. Interior Partitions and Doors				
Corridor walls				
Repairs	1	LS	65,000.00	65,000
One hour rated	3,960	SF	23.45	92,857
Two hour shaft				-
Interior windows, sidelights and transoms	99	SF	106.38	10,531

South Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
6. Interior Partitions and Doors				-
Interior doors, frames and hardware	66	EA	2,650.13	174,908
Elevator smoke curtains - none				-
Access panels walls and ceilings	20	EA	615.13	12,303
Card reader door hardware	20	EA	629.00	12,580
			$	368,179

7. Interior Finishes - Floors, Walls, Ceilings				
Corridors and circulation	7,732	SF	25.90	200,259
Toilet rooms				-
Basement level mechanical rooms - none				-
			$	200,259

8. Function Equipment, Casework and Specialties				
Protective wall guards and protection	11,685	SF	2.00	23,370
Toilet partitions and accessories				-
Casework and countertops				
Toilet rooms				-
Code signage	11,685	SF	0.51	5,945

South Wing - Shell & Core

Component Description	Quantity		Unit Cost		$
8. Function Equipment, Casework and Specialties					
Roller shades, exterior windows	3,438	SF	12.49		42,932
Fixed equipment					
Fire extinguishers	6	EA	411.63		2,470
				$	74,717
9. Stairs and Elevators					
Staircase flights, floor to floor					
ADA upgrades, riser closure, handrails and nosings	4	EA	21,275.00		85,100
Elevators					
Modernization - allowance					-
ADA upgrades					-
				$	85,100
10. Plumbing					
Sanitary fixtures and connection piping					-
Sanitary waste, vent and service piping and pumps	26,902	SF	4.63		124,422
New water meters, pressure regulating assemblies and back flow preventers	1	LS	13,875.00		13,875
Water heating equipment, pumps and tanks	26,902	SF	1.20		32,350

South Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
10. Plumbing				
Natural gas piping				
Earthquake valve			-	-
Gas regulator assembly			-	-
Piping	250	LF	48.10	12,025
Valves and connections	1	LS	4,625.00	4,625
Laboratory gas piping and equipment				
Laboratory acid waste system	26,902	SF	6.71	180,412
Laboratory vacuum				-
Laboratory air compressor				-
Rainwater drainage				
Roof and overflow drains	42	EA	707.50	29,885
Piping	2,433	LF	39.78	96,774
Sub-contractor commissioning	26,902	SF	0.93	24,884
Testing and sterilizing	26,902	SF	0.88	23,640
			$	542,891

11. Heating, Ventilating and Air Conditioning				
Heat generation and cooling equipment and pumps	26,902	SF	4.16	111,980
Piping and insulation	26,902	SF	4.00	107,608
Air handling equipment	26,902	SF	10.64	286,170
Ventilation equipment	26,902	SF	4.16	111,980
Air distribution	26,902	SF	11.10	298,612
Diffusers, registers and grilles	26,902	SF	1.39	37,327

South Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
11. Heating, Ventilating and Air Conditioning				
Controls	26,902	SF	3.50	94,157
Sub-contractor commissioning	26,902	SF	1.39	37,327
Testing and balancing	26,902	SF	1.05	28,194
				$ 1,113,353
12. Electrical				
Main power and distribution	26,902	SF	4.50	121,059
Emergency and UPS power	26,902	SF	2.78	74,653
Equipment connections and switches	26,902	SF	1.25	33,628
Power, panel boards, feeders and outlets	26,902	SF	5.50	147,961
Lighting				
Fixtures, conduit and cable	11,685	SF	18.00	210,330
Switches, conduit and wire	11,685	SF	1.85	21,617
Occupancy sensors	11,685	SF	1.39	16,213
Daylight sensors and lighting controls	11,685	SF	2.54	29,724
Audio visual conduit			-	-
Communications conduit and cable	26,902	SF	1.50	40,353
Fire alarm system	26,902	SF	2.54	68,432
Security system	26,902	SF	1.00	26,902
Sub-contractor commissioning	26,902	SF	0.46	12,442
				$ 803,314

South Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
13. Fire Protection				
Automatic fire sprinkler system	26,902	SF	4.63	124,422
			$	124,422
14. Site Preparation and Selective Demolition				
Site protective construction, dust and noise control	26,902	SF	1.39	37,327
Selective interior demolition				
Structural	26,902	SF	1.16	31,105
Exterior windows	26,902	SF	0.93	24,884
Exterior doors	26,902	SF	0.46	12,442
Roofing	26,902	SF	0.93	24,884
Interiors	26,902	SF	2.00	53,804
Fixed equipment and casework	26,902	SF	1.62	43,548
Debris removal	26,902	SF	0.93	24,884
Hazardous material abatement	26,902	SF	2.50	67,255
			$	320,134

South Wing - Tenant Improvements

Component Description	Quantity	Unit Cost	$
1. Foundations			
			$ -
2. Vertical Structure			
			$ -
3. Floor and Roof Structure			
			$ -
4. Exterior Cladding			
			$ -
5. Roofing and Waterproofing			
			$ -

South Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
6. Interior Partitions and Doors				
Interior walls				
One hour rated	3,645	SF	23.45	85,471
Interior windows, sidelights and transoms	137	SF	106.38	14,540
Interior doors, frames and hardware	35	EA	2,650.13	92,754
Elevator smoke curtains - none				-
Access panels walls and ceilings	8	EA	615.13	4,921
Card reader door hardware	10	EA	629.00	6,290
				$ 203,976
7. Interior Finishes - Floors, Walls, Ceilings				
Laboratory program	5,971	SF	26.00	155,246
Office program	9,246	SF	24.00	221,904
				$ 377,150
8. Function Equipment, Casework and Specialties				
Protective wall guards and protection	15,217	SF	1.00	15,217
Toilet partitions and accessories				-
Office casework	9,246	SF	7.40	68,420
Laboratory casework and equipment	5,971	SF	100.00	597,100

South Wing - Tenant Improvements

Component Description	Quantity		Unit Cost		$
8. Function Equipment, Casework and Specialties					
Fume hoods	14	EA	14,568.75		203,963
Code signage	15,217	SF	0.93		14,076
Fire extinguishers	12	EA	411.63		4,940
				$	903,715
9. Stairs and Elevators					
				$	-
10. Plumbing					
Sanitary fixtures and connection piping					-
Laboratory fixtures and equipment hook-ups	5,971	SF	2.04		12,151
Sanitary waste, vent and service piping	15,217	SF	1.85		28,151
Water heating equipment, pumps and tanks					-
Natural gas piping					-
Laboratory gas piping and equipment	5,971	SF	55.50		331,391
Rainwater drainage					-
Sub-contractor commissioning	15,217	SF	1.25		19,002
Testing and sterilizing	15,217	SF	0.57		8,699
				$	399,394

South Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
11. Heating, Ventilating and Air Conditioning				
Heat generation and cooling equipment and pumps	15,217	SF		-
Piping and insulation	15,217	SF	13.00	197,821
Air handling equipment	15,217	SF	5.00	76,085
Ventilation equipment	15,217	SF	2.00	30,434
Air distribution	15,217	SF	9.00	136,953
Diffusers, registers and grilles	15,217	SF	1.85	28,151
Controls	15,217	SF	8.00	121,736
Sub-contractor commissioning	15,217	SF	1.85	28,151
Testing and balancing	15,217	SF	1.05	15,948
			$	635,280
12. Electrical				
Main power and distribution	15,217	SF		-
Emergency and UPS power	15,217	SF		-
Equipment connections and switches	15,217	SF		-
Power, panel boards, feeders and outlets	15,217	SF	11.10	168,909
Lighting				
Fixtures, conduit and cable	15,217	SF	18.00	273,906
Switches, conduit and wire	15,217	SF	1.85	28,151
Occupancy sensors	15,217	SF	1.39	21,114
Daylight sensors and lighting controls	15,217	SF	2.54	38,708

South Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
12. Electrical				
Audio visual conduit	15,217	SF	0.93	14,076
Communications conduit and cable	15,217	SF	6.00	91,302
Fire alarm system	15,217	SF	3.50	53,260
Security system	15,217	SF	1.50	22,826
Sub-contractor commissioning	15,217	SF	0.93	14,076
			$	726,326
13. Fire Protection				
Automatic fire sprinkler system	15,217	SF	1.39	21,114
			$	21,114
14. Site Preparation and Selective Demolition				
Site protective construction, dust and noise control				-
Selective interior demolition				-
Hazardous material abatement				-
			$	-

Center Wing - Shell & Core

Component Description	Quantity		Unit Cost		$
1. Foundations					
Foundation drainage	724	LF	20.96		15,182
				$	15,182
2. Vertical Structure					
Enlarge door opening in existing reinforced concrete shear wall	26	EA	12,419.05		322,895
				$	322,895
3. Floor and Roof Structure					
Slab repairs at locations of new utilities, equipment and openings					
Lowest floor	17,069	SF	3.24		55,261
Upper floor	44,390	SF	3.70		164,243
Roof	22,966	SF	2.78		63,731
Equipment pads	250	SF	16.65		4,163
Miscellaneous metals, concrete and anchorage	61,459	SF	1.39		85,274
				$	372,671
4. Exterior Cladding					
Wall furring and insulation - existing					-
Exterior finish repairs	23,400	SF	4.63		108,225
Rooftop equipment screen - none					-

Center Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
4. Exterior Cladding				
Exterior windows	3,642	SF	106.38	387,418
Exterior doors	6	EA	4,023.75	24,143
Interior finish to exterior wall, patch and repair	23,400	SF	2.78	64,935
				$ 584,720
5. Roofing and Waterproofing				
Waterproofing				
Exterior wall	1,800	SF	9.94	17,899
Slabs - none			-	-
Roofing				
Roof insulation and cover board	22,966	SF	6.24	143,394
Membrane roofing	22,966	SF	10.64	244,301
Walkway pads	22,966	SF	0.28	6,373
Roofing upstands and sheet metal	22,966	SF	6.08	139,676
Caulking and sealants	25,999	SF	0.42	10,822
				$ 562,465
6. Interior Partitions and Doors				
Corridor walls				
Repairs	1	LS	90,000.00	90,000
One hour rated	2,970	SF	23.45	69,643
Two hour shaft	5,940	SF	30.06	178,571
Interior windows, sidelights and transoms	198	SF	106.38	21,062

Center Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
6. Interior Partitions and Doors				
Interior doors, frames and hardware	68	EA	2,650.13	180,209
Elevator smoke curtains - none				-
Access panels walls and ceilings	20	EA	615.13	12,303
Card reader door hardware	20	EA	629.00	12,580
			$	564,367
7. Interior Finishes - Floors, Walls, Ceilings				
Corridors	12,227	SF	25.90	316,679
Toilet rooms	3,888	SF	69.38	269,730
Basement level mechanical rooms - none				-
			$	586,409
8. Function Equipment, Casework and Specialties				
Protective wall guards and protection	25,386	SF	2.00	50,772
Toilet partitions and accessories	25,386	SF	5.00	126,930
Casework and countertops				
Toilet rooms				-
Code signage	25,386	SF	0.51	12,915

Center Wing - Shell & Core

Component Description	Quantity		Unit Cost		$
8. Function Equipment, Casework and Specialties					
Roller shades, exterior windows	3,642	SF	12.49		45,479
Fixed equipment					
Fire extinguishers	6	EA	411.63		2,470
				$	238,566
9. Stairs and Elevators					
Staircase flights, floor to floor					
ADA upgrades, riser closure, handrails and nosings	6	EA	21,275.00		127,650
Elevators					
Modernization - allowance	1	EA	63,825.00		63,825
ADA upgrades	1	EA	27,750.00		27,750
				$	219,225
10. Plumbing					
Sanitary fixtures and connection piping	60	EA	1,711.25		102,675
Sanitary waste, vent and service piping and pumps	61,459	SF	4.63		284,248
New water meters, pressure regulating assemblies and back flow preventers	1	LS	13,875.00		13,875
Water heating equipment, pumps and tanks	61,459	SF	1.20		73,904

Center Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
10. Plumbing				
Natural gas piping				
Earthquake valve	1	EA	10,424.75	10,425
Gas regulator assembly	1	EA	5,633.25	5,633
Piping	400	LF	48.10	19,240
Valves and connections	1	LS	4,625.00	4,625
Laboratory gas piping and equipment				
Laboratory acid waste system	61,459	SF	6.71	412,159
Laboratory vacuum	1	EA	53,650.00	53,650
Laboratory air compressor	1	EA	78,625.00	78,625
Rainwater drainage				
Roof and overflow drains	57	EA	707.50	40,621
Piping	3,307	LF	39.78	131,540
Sub-contractor commissioning	61,459	SF	0.93	56,850
Testing and sterilizing	61,459	SF	0.88	54,007
				$ 1,342,078
11. Heating, Ventilating and Air Conditioning				
Heat generation and cooling equipment and pumps	61,459	SF	4.16	255,823
Piping and insulation	61,459	SF	5.00	307,295
Air handling equipment	61,459	SF	10.64	653,770
Ventilation equipment	61,459	SF	4.16	255,823
Air distribution	61,459	SF	11.10	682,195
Diffusers, registers and grilles	61,459	SF	1.39	85,274

Center Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
11. Heating, Ventilating and Air Conditioning				
Controls	61,459	SF	3.50	215,107
Sub-contractor commissioning	61,459	SF	1.39	85,274
Testing and balancing	61,459	SF	1.05	64,411
				$ 2,604,972
12. Electrical				
Main power and distribution	61,459	SF	4.00	245,836
Emergency and UPS power	61,459	SF	2.78	170,549
Equipment connections and switches	61,459	SF	1.50	92,189
Power, panel boards, feeders and outlets	61,459	SF	5.50	338,025
Lighting				
Fixtures, conduit and cable	25,386	SF	18.00	456,948
Switches, conduit and wire	25,386	SF	1.85	46,964
Occupancy sensors	25,386	SF	1.39	35,223
Daylight sensors and lighting controls	25,386	SF	2.54	64,576
Audio visual conduit				-
Communications conduit and cable	61,459	SF	1.50	92,189
Fire alarm system	61,459	SF	2.54	156,336
Security system	61,459	SF	1.00	61,459
Sub-contractor commissioning	61,459	SF	0.46	28,425
				$ 1,788,717

Center Wing - Shell & Core

Component Description	Quantity		Unit Cost	$
13. Fire Protection				
Automatic fire sprinkler system	61,459	SF	4.63	284,248
			$	284,248
14. Site Preparation and Selective Demolition				
Site protective construction, dust and noise control	61,459	SF	1.39	85,274
Selective interior demolition				
Structural	61,459	SF	1.16	71,062
Exterior windows	61,459	SF	0.93	56,850
Exterior doors	61,459	SF	0.46	28,425
Roofing	61,459	SF	0.93	56,850
Interiors	61,459	SF	2.00	122,918
Fixed equipment and casework	61,459	SF	1.62	99,487
Debris removal	61,459	SF	0.93	56,850
Hazardous material abatement	61,459	SF	2.50	153,648
			$	731,362

Center Wing - Tenant Improvements

Component Description	Quantity	Unit Cost	$
1. Foundations			
			$ -
2. Vertical Structure			
			$ -
3. Floor and Roof Structure			
			$ -
4. Exterior Cladding			
			$ -
5. Roofing and Waterproofing			
			$ -

Center Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
6. Interior Partitions and Doors				
Interior walls				
One hour rated	10,935	SF	23.45	256,412
Interior windows, sidelights and transoms	410	SF	106.38	43,620
Interior doors, frames and hardware	68	EA	2,650.13	180,209
Elevator smoke curtains - none				-
Access panels walls and ceilings	14	EA	615.13	8,612
Card reader door hardware	20	EA	629.00	12,580
				$ 501,433
7. Interior Finishes - Floors, Walls, Ceilings				
Laboratory program	36,073	SF	26.00	937,898
				$ 937,898
8. Function Equipment, Casework and Specialties				
Protective wall guards and protection	36,073	SF	1.00	36,073
Toilet partitions and accessories				-
Laboratory casework and equipment	36,073	SF	100.00	3,607,300
Fume hoods 5'	50	EA	14,568.75	728,438
Fume hoods 8'	5	EA	17,868.75	89,344

Center Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
8. Function Equipment, Casework and Specialties				
Code signage	36,073	SF	0.93	33,368
Fire extinguishers	12	EA	411.63	4,940
				$ 4,499,461
9. Stairs and Elevators				
				$ -
10. Plumbing				
Sanitary fixtures and connection piping				
Laboratory fixtures and equipment hook-ups	36,073	SF	2.04	73,409
Sanitary waste, vent and service piping	36,073	SF	1.85	66,735
Water heating equipment, pumps and tanks				-
Natural gas piping				-
Laboratory gas piping and equipment	36,073	SF	55.50	2,002,052
Rainwater drainage				-
Sub-contractor commissioning	36,073	SF	1.25	45,046
Testing and sterilizing	36,073	SF	0.57	20,621
				$ 2,207,862

Center Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
11. Heating, Ventilating and Air Conditioning				
Heat generation and cooling equipment and pumps	36,073	SF		-
Piping and insulation	36,073	SF	15.00	541,095
Air handling equipment	36,073	SF	6.00	216,438
Ventilation equipment	36,073	SF	2.00	72,146
Air distribution	36,073	SF	10.00	360,730
Diffusers, registers and grilles	36,073	SF	1.85	66,735
Controls	36,073	SF	9.00	324,657
Sub-contractor commissioning	36,073	SF	1.85	66,735
Testing and balancing	36,073	SF	1.05	37,805
				$ 1,686,342
12. Electrical				
Main power and distribution	36,073	SF		-
Emergency and UPS power	36,073	SF		-
Equipment connections and switches	36,073	SF		-
Power, panel boards, feeders and outlets	36,073	SF	11.10	400,410
Lighting				
Fixtures, conduit and cable	36,073	SF	18.00	649,314
Switches, conduit and wire	36,073	SF	1.85	66,735
Occupancy sensors	36,073	SF	1.39	50,051
Daylight sensors and lighting controls	36,073	SF	2.54	91,761

Center Wing - Tenant Improvements

Component Description	Quantity		Unit Cost	$
12. Electrical				
Audio visual conduit	36,073	SF	0.93	33,368
Communications conduit and cable	36,073	SF	6.00	216,438
Fire alarm system	36,073	SF	3.50	126,256
Security system	36,073	SF	1.50	54,110
Sub-contractor commissioning	36,073	SF	0.93	33,368
				$ 1,721,809
13. Fire Protection				
Automatic fire sprinkler system	36,073	SF	1.39	50,051
				$ 50,051
14. Site Preparation and Selective Demolition				
Site protective construction, dust and noise control				-
Selective interior demolition				-
Hazardous material abatement				-
				$ -

APPENDICES

A. PLANNING PRINCIPLES
B. GREEN LAB DESIGN AND EQUIPMENT CHECKLISTS
C. MEETING MINUTES
D. MECHANICAL DEFICIENCY TABULATIONS
E. PLUMBING DEFICIENCY TABULATIONS
F. ELECTRICAL DEFICIENCY TABULATIONS
G. EXISTING GSF AND ASF
H. LOADING DOCK PROGRAM

UC RIVERSIDE UNIVERSITY OF CALIFORNIA

Batchelor and Pierce Hall Projects - Planning Principles

August 10, 2016

Concentrated planning efforts for the planned Batchelor and Pierce Hall projects commenced with the convening of a faculty work group in January 2016. Each building has a scope component that addresses primarily core building systems, and interior building spaces. The desire is to complete work in a coordinated fashion. Capital Asset Strategies and Architects & Engineers will work collaboratively with the identified faculty work group to plan and steward the project.

Guiding principles for the combined Batchelor and Peirce capital projects include:

1. All space is Provost Space. Space allocations and future space assignment will be approved by the EVC/Provost.
2. The purpose of these projects is to improve the quality of instructional and research environments, address space deficiencies, and help position the campus to achieve its strategic goals by accomidating significant faculty and student workload growth. This is accomplished by improving spaces that benefit undergraduate and gradute laboratory based programs. The priority is therefore to provide instruction and research laboratories, and assocated support spaces.
   a. The greatest space need is wet laboratories followed by dry laboratories.
   b. Office space assignment will first be given primarily to faculty who are assigned laboratory space in the buidlings. Office space will be assigned to meet the greatest campus need.
   c. The project funding available will not allow for the complete interior renovation of either building and the work group will be responsible to program spaces based on the established priority for research programs and withing the established budgets.

3. Project resources are limited and fixed. Improvements should be developed to ensure the greatest value for the investment:

   a. Batchelor Hall Building Systems Renewal ($18.1 M General Funds Financing)

   b. Pierce Hall (Building System) Improvements ($34.6 M General Funds Financing)

   c. Combined Batchelor and Pierce Hall Interiors ($30 M External Financing)

   d. All phasing, surge and relocation costs must be covered by these projects).

   e. Furniture and moveable equipment is not part of the building systems projects and currently is not part of the interiors project. If moveable items are required they will need to be afforded through the interiors project or not included as part of the project.

4. The $30 million of external financing for the two buildings is currently allocated evenly, however, the $30 million is fungible and flexible in the context of planning efficiently and effectively for both buildings during the programming phase of work. Some re-apportionment of budgeting is allowed as long as the total budget is not exceeded.

5. Programming for both buildings should be coordinated and planned in such a way that maximum synergies and cost effective solutions are possible. It is not required that existing functions be reproduced strictly if alternate organization of space within the two buildings would benefit the programs and provide a more efficient and affordable space plan.

Green Lab Design Checklist

Green Lab Program: A bridge between Lab 21, LEED and Operation

Equipment: See list of energy efficient equipment for more details

"Capital" funded:

- Autoclave energy/water efficient, (ex: Priorclave)
- Ice machine Energy Star/ Water Sense
- LED lighting and water efficient growth chamber
- Right size equipment
- No single pass cooling equipment

"PI" funded:

- Energy efficient Ultra Low Temperature (ex: Stirling, Thermo Fisher TSX600)
- LED microscope
- Energy Star dishwasher for chemistry lab
- Energy star for refrigerator and ice machine
- No single pass cooling equipment (ex: Findenser to replace water cooling condenser)

Transferred equipment for retrofit or when new PI coming

- Optimal placement

Materials:

- Benches materials: no toxic material, easy to maintain and clean without corrosive products
- Furniture made of sustainable materials - LEED
- Sustainable Floor - Easy to maintain and handle water and other potential chemical. Provide good comfort for users standing for many hours
- No copper pipe - bleach react with copper pipes and implies the need to flush with water every day

Design:

1. HVAC

- Fumehood VAV
- Variable/optimized Air Exchange Rate, in combination with real time sampling system, with variation from 2 to 10. (ex: Aircuity)
- Room specification such as equipment room, microscope room and freezer farm with separated ventilation, thermostat and heating/cooling system individual
- Shared equipment room

2. Plug load

- Benches: Power strip, timer for some equipment such as drying oven
- Freezer farm with emergency plug
- Integrate option for surplus equipment - allocate 1 per floor

3. Light:

- LED and sensor light in the hallway - Consider placement of occupancy sensor where it is the most appropriate for lab activities, avoiding the bench top level
- Shading system for natural light
- Task light

4. Water:

- Elimination of Single pass cooling – new UC policy
    - Having closed loop design for cooling equipment or a capture system for reuse
- Faucet: Aerator for regular hand washing and glassware washing
- Optimize default pressure for Deionized water – often too high by design
    - possibly include foot pedal design for DI water (results in less use)

5. Waste

- Design a waste collection station inside laboratories including recycling and hazardous waste bin. The station should have:
    - Regular trash bin
    - Broken glass bin
    - Recycling bin for commingle
    - Extra location for hazardous trash bin
    - Per floor: trash, commingle recycling, Styrofoam, space for large packaging cardboard

6. Metering

- Sub metering for energy and water: large equipment, such as autoclave, ice machine… and /or equipment room.
- Metering building

List of energy and/or water efficient equipment for laboratories

Green Lab Program: A bridge between Lab 21, LEED and Operation

Autoclave:

- Energy efficient: Use less than 40kWh/day for 8 hours shift
- Water efficient : Use less than 200gal /day for 5 cycles/day
- Don't use single pass cooling water
- Can be easily turn on and off
  - Example: *Priorclave* -http://priorclavena.com/ chamber capacity up to 500 Liters

Ultra-Low Temperature Freezer:

- Footprint smaller than 12sq.ft
- Use less than 10kWh/day and less than 500Watt/cu ft. of storage capacity at -80°C
- Use low Global Warming Potential refrigerant such as: R170/R290 – ethane and propane
  - Example:
    - *Stirling Ultra Cold*: 7.5kWh/day ; Footprint: 8.75sq.ft ; Capacity 600 2" boxes
    - *Thermo Fisher TSX600*: 8.7kWh/day; footprint: 8.75sq.ft; Capacity 600 2" boxes

Growth chamber:

- LED light
- Water efficient : water recirculation, optimization and automatization of the irrigation system

No single pass cooling water system such as condenser used in Chemistry: water-free condenser are available on the market

- Example: http://www.radleys.com/products/our-products/benchtop-and-hotplate-tools/findenser-air-condenser

VAV Fumehood with sensors

Ice machine:

- EPA energy Star and/or water sense

Microscope with LED lamp

Energy efficient centrifuge

Energy Star for refrigerator and -20°C freezer

Bio-safety cabinet

- Energy efficient using less than 8kWh/day
- Save energy standby mode included

Dishwasher for chemistry lab

- EPA Energy Star and Water sense

Drying oven with build-in timer

Water bath using beads bath instead of water

- Example: Lab Armor: http://www.labarmor.com/

LED for general lighting

<u>Other consideration:</u>

- Optimal placement regarding thermostat, heat exhaust and air flow
- Right size equipment

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March 8, 2016

OWNER REVIEW MEETING MINUTES #01

PROJECT: University of California Riverside (UCR)
Pierce Hall Renovation
RBB Project No. 1611100
UCR Project No: 950511-958027

LOCATION: Conference Room 240-10

DATE / TIME OF MEETING: March 8, 2016 9:00 A.M. – 10:00 A.M.

DATE OF NEXT MEETING: March 29, 2016 (Tentatively)

PURPOSE: Kick Off Meeting

DISTRIBUTION AND ATTENDANCE - Latter signified by '(A)' Part Time signified by '(PT)'

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Wayne Romanek	CR	(310) 477-3900	wayne@crlainc.com

1.01 General Information

- The team met to kick off the Pierce Hall project.
- Items discussed:
  - Project Directory: RBB to issue updated version for review.
  - Communication Protocol: Jon will be the single point of contact for all communications; all documents must go to him with a copy to Blythe. RBB will not distribute any documents to UCR team members.
  - Work Plan: A detailed work plan will be issued by RBB in the immediate future. Path to be followed must be clearly stated.

- Meeting Agendas: RBB will issue meeting agendas to UCR in advance of every meeting.

1.02 Schedule Review

- Workshops will more than likely start on Tuesday, March 29th and will occur every other week.
- UCR anticipates 3-4 laboratory planning workshops and 2-3 classroom workshops.
- Existing conditions assessment can begin immediately.
- DPP completion is anticipated for mid to late May.

1.03 Existing Conditions Assessment

- Prior to starting the definition of the scope of work the design team will be on site to document existing conditions.
- RBB will issue possible dates for the design team to be on site.
- RBB suggested using deficiency matrixes and deficiency tabulation sheets to document the condition of each room and evaluate the MEP equipment. RBB will issue samples of evaluation tools for feedback.
- RBB does not anticipate destructive testing to identify hidden conditions.
- RBB suggested UCR consider bringing to the team Eco3D, a laser scanning company that specializes in documenting field conditions. Their expertise in scanning to point cloud and helping build 3D models that can be integrated into BIM could be an asset to the project. RBB will contact Eco3D to coordinate a lunch-n-learn at UCR for them to present their services.

1.04 DPP Project Goals

- Identify existing conditions.
- Evaluate current use of existing building.
- Identify best and highest use.
- Analyze phasing impact as it relates to disruption and to the project budget.
- Design a project that is energy efficient and meets or exceeds Title 24. Evaluate windows, exterior wall and roof.
- Cross-program between Pierce Hall and Batchelor Hall.
- UCR issued 3 documents to be used in the development of the DPP.
  1. Planning Principles (form Batchelor Hall project): the 5 Guiding principles stated must be followed in order to achieve a more uniform design concept between different buildings.
  2. Work plan discussion outline: Document identifies steps toward achieving a viable work plan.
  3. Room Condition Rating Scale: RBB will use this information to augment already developed deficiency matrixes.

1.05 Site Issues

- Creating a pedestrian connection south of Winston Chung and Bourns Hall to the housing projects at the west end of the campus is critical.
- The area north of Pierce Hall and south of Winston Chung will be required to be thoroughly analyzed in order to take into account operational issues related to truck traffic, loading dock, circulation and on site MEP equipment.

- UCR is uncertain on whether a 7,000 SF footprint for the classroom building is appropriate development for the site. Further evaluation is required as to what is the best use of the land. Regardless of the flow and how the site is used the program must be flexible and must provide support for STEM classrooms that can accommodate 200 stations.

1.06 Roof and MEP Equipment Discussion

- For the most part the precinct does not use roof mounted equipment. If considered, it must be screened.
- Roof area should be evaluated for solar panel placement.
- Maintain clerestory windows for natural light into labs adjacent to the roof wells.

1.07 Required Information

- As-builts: All available information was issued to RBB; CAD or Revit files are not available.
- Geotech: Currently being done by UCR.
- Site Survey: Fly over and topo map will be done in the immediate future.
- Hazardous Materials Survey: Currently being assessed by UCR.
- Air Balance Report: UCR to provide.
- Panel Readings: UCR to provide.
- UCR planning guidelines.
- UCR preferred vendors.
- UCR Multi-Disciplinary Building planning modules to be used by the RBB team as a guideline for developing the Pierce Hall lab planning.

1.08 Deliverables

- RBB will produce DPP in 8½ x 11 format.
- Any software can be used to produce the final document but the final product must be transferred to UCR in a tabbed PDF format, except for all graphics which should be editable.
- Executive summary must be a stand alone document that describes the entire scope.

The above constitutes our interpretation of matters discussed and decisions reached. Please notify the Architect within (7) seven days of the date of this document with any corrections or additions.

RBB ARCHITECTS INC

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RBB

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March 29, 2016

OWNER REVIEW MEETING MINUTES #2A

PROJECT:	University of California Riverside (UCR) Pierce Hall Renovation RBB Project No. 1611100 UCR Project No: 950511-958027
LOCATION:	Conference Room 240-12
DATE / TIME OF MEETING:	March 29, 2016 2:00 P.M. – 5:00 P.M.
DATE OF NEXT MEETING:	April 12, 2016 (Tentatively)
PURPOSE:	Renovation Planning and Programming

DISTRIBUTION AND ATTENDANCE - Latter signified by '(A)' Part Time signified by '(PT)'

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2A.01 Meeting Goals

UCR reminded the team of the parameters for the planning and programming of the Pierce Hall and Batchelor Hall projects:

- UCR's intent is to create standard and flexible space that brings best value and optimizes the use of the building within the prescribed budget.
- Parallel planning effort will be done for both projects; the Batchelor Hall consultant has been selected and the projects should be able to close the gap and align closer in schedule within the next few weeks. Synergies between projects will create most opportunities for the Researchers.
- UCR stated that parallel effort is being made to develop a classroom/lecture hall building containing a total of 200 seats north of the existing Pierce Hall Building. Several configurations will be explored including sub-dividable classrooms, sloped floor auditorium style and other configurations that would work within the constraints of the site.

2A.02 Guiding Principles

The guiding principles were reviewed in detail.

- Summary of the discussion:
  - 2 major Research Buildings will be developed simultaneously. Both will have State funded and non-State funded components.
  - The team should see the projects as what brings best value for Researchers, faculty and students, all to be done within the limits of the budget.
  - The team noted that furniture and furnishings are not included in the budget.
  - Refer to Attachment 1.

2A.03 Schedule Review

The schedule for Batchelor and Pierce Hall systems renewal and interior improvements was reviewed by all.

- Pierce Hall has an immediate start with a target date of January 2017 for start of working drawings and a construction completion date of September 2019. Batchelor Hall systems renewal is targeting September 2016 for start of working drawings and a construction completion of January 2019. Interiors improvements start working drawings in February 2017 and complete construction in May 2019
- The primary goal is to run both projects concurrently or as close as possible. Pierce Hall will move forward without delay.
- An important consideration is project phasing and the potential impact on the total project budget as there is a premium for phasing the construction. The design team will incorporate the phasing options as part of the DPP; this is essential for project scheduling and to schedule faculty relocations when necessary.
- See Attachment 2

2A.04 Existing Building Analysis

RBB presented plans and sections to explain the existing building zoning:

- The building was built in 2 phases. The original building included the center and south wings. The north wing was added a year later.

- The basement has 3 separate zones and each zone has an Air Handler Unit (AHU) located in a dedicated mechanical room. Each wing is supported by a separate AHU.
- The building is designed to bring fresh air into the basement mechanical room through areaways at grade, and exhaust the fume hoods at the roof through shafts that parallel to the center corridors. Concrete shear walls and exhaust shafts paralleling all corridors present a limitation to an open lab planning concept.
- An initial potential phasing concept could consider the renovation of the project in three phases. This allows for the renovation of each wing at a time while leaving the remaining sections operational. This could work well as the corresponding basement mechanical system would be replaced without affecting other areas. The team anticipates an approx 4 month duration for the replacement of each AHU. It is anticipated that Phase 1 would consist of the North Wing combined with Classroom Addition and Loading Dock reconfiguration to the north. Input from the CM@Risk is needed to finalize phasing strategy.
- Existing non-operational chillers are located on the second floor roof of the south wing. The chillers were added to produce chilled water for lab use, but now the labs are served from chilled water from the central plant and the roof mounted chillers are no longer operational. The design team recommends removal.
- In 2004, a fume hood exhaust manifold was added to the roof.
- A preliminary count of fume hood in the building reflects a total of approximately 98 hoods, with 29 on the first floor, 12 on the second and 57 on the third floor. Further verification of the hood quantity is required. The team will also identify those fume hoods worth keeping. The current fume hoods are constant volume; proposed new hoods would be variable air volumes. Preliminary analysis by the mechanical engineer assumes an increase of 5% percent without adjusting the existing manifold. Final increase in fume hood density will be verified against the program needs and further analyzed for capacity by the mechanical engineer.
- The second floor had wet labs at one time.
- UCR is currently preparing a Hazardous Materials study to identify if and where asbestos and lead paint is located and the cost to abate these materials.
- A code analysis will be developed as part of the renovation effort.

2A.05 Infrastructure System Analysis:

RBB stated that the A/E team had walked the site on 3/17; visible conditions of each room were evaluated and documented by each discipline. A formal report will be issued as part of the DPP:

- Architectural components evaluated:
  - ADA, Finishes, Casework, Windows, Building Envelope, Water Intrusion and Roof.
  - A summary of each of these elements were documented in plans identifying the rooms as good, fair or poor.
- Architectural evaluation results:
  - The consensus is that the overall condition of the architectural elements of the building is poor.
  - The finishes and casework are mostly in bad condition and need to be replaced.
  - The windows need further detailed evaluation.

  - Building envelope appears to have leaks that need to be repaired.
  - Isolated labs have been identified as good as they were recently renovated. The infrastructure improvements could possibly impact these lab areas.
  - Toilets, elevators, doors, stairs and labs are not ADA compliant. These need to be upgraded to current codes. Door openings at labs have been confirmed to be able to be widened to comply with code.
  - Vacant and occupied spaces were reviewed. Campus will review and provide feedback on RBB's findings.
- Fire and Life Safety components evaluated:
  - Building does not have fire sprinklers.
- Fire and Life Safety evaluation results:
  - Fire Sprinkler system should be added throughout
- Mechanical and Plumbing Systems evaluated:
  - Fume Hood Manifold, General Exhaust, Supply Air, Energy Consumption
  - Lab Gases, Glass Piping, Sinks and Drains, Fittings
- M/P systems evaluation results:
  - Systems in poor condition with high failure potential, beyond its useful service life, and in need of replacement:
    - Components of Built-up Air Handling Units
    - All exhaust fans in the basement
    - All steam system components – PRVs, Valves,
    - Condensate return unit, Flash Tank,
    - Condensate Meter, & Steam Flow Traps
  - Systems in fair condition with moderate deficiencies, approaching the end of its service life, and recommended to be replaced:
    - Chilled Water Pumps
    - Heating Hot Water Pumps
    - Heating Hot Water Heat Exchanger
    - Cold Room Indoor Units & Outdoor Units
    - Fume Exhaust Fans located on Roof
- Electrical systems evaluated:
  - Switches, substations, panel boards, light fixtures and wiring devices
- Electrical Systems evaluation results:
  - Oil Fuse Cutouts used for primary switch were observed:
    - Switches are obsolete
    - Only refurbished replacement parts will be available
    - Apparent oil leakage
    - Oil contains PCB
  - Unit Substations 1, #2 and #3
    - 1965 Vintage Switchgear by Square-D
    - Transformer oil has PCB.
    - Secondary (LV) Side Circuit Breakers by ITE. ITE is now purchased by Siemens. Siemens informed team they do not maintain stock for vintage circuit breakers.
    - Nominal life of switchgear is approximately 30 years. Subject switchgear is 50 years old.

  - Unit Substation #4
    - 1967-1968 Vintage Switchgear by Westinghouse
    - Transformer oil has PCB
    - Hard to find replacement circuit breakers.
    - Nominal life of switchgear breakers is approximately 30 years. Subject switchgear is in service for 48 years.
  - Panelboards
    - Located in corridors manufactured by Square D
    - Most are old and have served their anticipated service life span
    - Recommend replacement
  - Lighting Fixtures
    - Appear to be the same age as the building, except for few isolated renovated areas on first floor
    - Majority of lighting fixture lenses are discolored, a substantial number are broken or ready to fail. Lenses held in place by non-compliant means.
    - Recommend replacing the lighting fixtures with the state of the art LED fixtures.
  - Wiring Devices:
    - Amount of existing receptacles in laboratories are not adequate to satisfy requirements of a modern laboratory
    - Most receptacles are the old Bakelite type
    - Receptacles should be discarded and replaced by new ones; quality and quantity are low

2A.06 Lab Planning and Programming

Glen Berry presented the Lab types included in the MRB document. Labs types were identified to be ideal for Life Sciences. They include:

  - Prototype Wet 1
  - Prototype Wet 2
  - Prototype Flex 1
  - Prototype Flex 2

- Each lab type was analyzed and key elements were discussed:
  - Wet Lab 1 - Low fume hood density
    - Life Science Context
    - 10-6” lab module width
    - 37’ lab module depth (open lab with first layer of dedicated support)
    - Open lab suite
    - Flexible above bench top
    - Fixed below bench top
  - Wet Lab 2 – Medium Fume Hood Density
    - Life Science Context
    - 10-6” lab module width
    - 37’ lab module depth (open lab with first layer of dedicated support)
    - Open lab suite
    - Flexible above bench top
    - Fixed below bench top

- Flex Lab 1
  - Life Science/Engineering Context
  - Low fume hood density
  - 10-6” lab module width
  - 37’ lab module depth (open lab with first layer of dedicated support)
  - Open lab suite
  - Flexible casework system
- Flex Lab 2
  - Life Science/Physics Context
  - Low fume hood density
  - 10-6” lab module width
  - 37’ lab module depth (open lab with first layer of dedicated support)
  - Open lab suite
  - Flexible casework system

- The team discussed the common elements in each lab:
  - 10’-6” lab planning module
  - Assigned lab bench workstations at exterior window
  - Open lab suite – lab space assigned by bench (instead of room)
  - Lab support directly adjacent to lab – accessible from lab
  - Flexible casework systems
  - Lab support directly adjacent to and remote from open lab
- The team discussed the specific Pierce Hall constraints and opportunities as they reflect to planning modules
  - 11’ lab planning module
  - 25’ lab depth (relatively shallow)
  - Lab support modules can be located at ends of open lab suites
  - Can accommodate research or teaching programs
  - Interior shaft wall allows for high density of fume hoods
- Primary programming goals include identifying the type of lab, the fume hood density and the number of people. Part of this process is for the design team to identify the best way to adapt the building based on the types of laboratories required.
- Ideal Chemistry Research lab and Chemistry Teaching lab components were discussed within the context of Pierce Hall:
  - Chemistry Research Lab
    - 11’ lab planning module
    - A minimum of 25’ lab depth available (worst case scenario)
    - Alternating peninsulas of chemical hoods and lab benches
    - Open lab design
    - Lab support rooms located at ends of open suites
  - Chemistry Teaching Lab
    - 11’ lab planning module
    - A minimum of 25’ lab depth available
    - Assumes 24 students
    - Fixed islands for students
    - Fume hoods at perimeter
    - Prep and instrument rooms at ends of lab

    - Graduate students need dedicated desk space; it is preferred they be located close but not inside the lab area.
- Office space to support both lab types was discussed; the team prefers they be outside the lab.
- Explosives require a separate dedicated area with walls.
- Existing Shops could be located in other buildings
- Weight of equipment is a factor in Geology.
- The team discussed the fact that lab assignment has not taken place; lab design must be flexible and not tailored to one specific use so as to accommodate future needs that may not be known at this time.
- Lab to lab / support ratio is 2/3 lab and 1/3 lab support. A 1 to 1 ratio is optimal.
- Lab support spaces discussed:
    - Cold Rooms; 1 per floor (4˚C). Central location desirable; reach in boxes may be more flexible.
    - Instrument Room.
    - Dark Room requires further discussion.
    - Haz Mat storage.
    - Glass wash and auto clave.
    - Clean work room.
    - Tank area LN and O2.
- The working group prefers shared cores not to be included; this requires operational commitments from the departments that may not be able to be kept.
- Lab occupancy could be “B” or “L”; implications to the design need to be studied. The team agrees this decision will be a direct result of the programs included in the final DPP. In order to accommodate more restrictive use, an “H” occupancy room may be added for greater flexibility.
- MEP services discussed; the team agreed it is best to issue a questionnaire to gather all relevant information from the faculty in order to identify all requirements.
- The engineering department was not represented at the meeting but is anticipated to be in the building. UCR will have an internal discussion and will report back to the design team.
- Preliminary discussion of 12 teaching labs by type; his requires further discussion.

    1 Environmental Sciences
    3 Earth Sciences
    7 Chemistry
    1 Bio Chemistry

2A.07 Action Items and Next Steps

- RBB will update the infrastructure analysis.
- RBB will develop options for toilet upgrades for code compliance including gender neutral facilities.
- A study of the hood capacity will be done with the mechanical engineer.
- RBB will report on progress of ECO 3D laser scanning of the building.
- Glen Berry will:
  - Update planning process to show options for supporting instructional laboratories and research laboratories
  - Provide options for instructional laboratories.
  - Further develop lab prototypes, including Prototype laboratory types: Wet 1 (low density fume hoods); Wet 2 (medium density FH); Wet 3 (high density FH); flex 1 and flex 2.
  - Issue faculty questionnaire
  - Develop first draft of potential program

The above constitutes our interpretation of matters discussed and decisions reached. Please notify the Architect within (7) seven days of the date of this document with any corrections or additions.

RBB ARCHITECTS INC

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April 12, 2016

OWNER REVIEW MEETING MINUTES #3A

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PROJECT:	University of California Riverside (UCR) Pierce Hall Renovation RBB Project No. 1611100 UCR Project No: 950511-958027
LOCATION:	Conference Room 210-16
DATE / TIME OF MEETING:	Tuesday, April 12, 2016 2:00 P.M. – 4:45 P.M.
DATE OF NEXT MEETING:	Tuesday, April 26, 2016
PURPOSE:	Pierce Hall Workgroup DPP (Detailed Project Program) Charrettes

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3A.01 Faculty Questionnaire:

A laboratory questionnaire was previously distributed to the Working Group to obtain information on preferences and to gain input towards defining an ideal lab.

- Peter and Eric will distribute the questionnaire to other faculty members.
- Responses to be issued to the design team by 4/15/16.
- 10% of the building is assigned to Engineering.
- Planning to consider Engineering needs within the flexibility and adaptable laboratory types This will be taken into account when answering the questionnaire.
- For planning purposes Glen will apply information received based on “Best Practices”.

3A.02 Walk-thru Observation Report:

Glen Berry reported his observations from a walk-through of the building:

- North Wing:
  - All 3 floors are either unoccupied, or are not being used as lab space (currently classrooms or offices). Many spaces noted as occupied on RBB assessment drawings appear unoccupied.
  - This wing appears to be the logical first phase of the renovation. Compared to center and south wings, it is "empty" as an active teaching or research environment.
  - Relocating some pockets of activity will be necessary.
- Center Wing:
  - The east side, first floor: is where the 7 General Chemistry teaching labs are currently located.
  - Program will replace existing teaching labs with same number of labs, maintaining the function in either a new location or in the same location. Each General Chemistry teaching lab is to accommodate 24 students, 360 section drawers (24 students x 15 sections), and two (2) six foot hoods. Three of these labs have been renovated recently- other labs can be brought up to same standard if "brand new" teaching labs are not provided.
- South Wing:
  - Contains a double loaded corridor with offices on each side. The south side of this wing, level 2, is currently used as office space, but was originally designed as research lab space. This should be considered to be renovated for research lab space.
  - As a cost saving strategy, Dr. Chronister suggested that the research labs that have 15 year old metal fume hoods do not need to be renovated and can remain as is. The team discussed the need to upgrade the MEP infrastructure and compliance with ADA. Improvements to the infrastructure to support non-renovated lab spaces may be required.
  - Potential labs that meet the no renovation requires definition are:
    - 3342, 3425 (level 3, north wing, east side)
    - 3310 (level 3, center wing, west side)
    - 3360, 3367 (level 3, center wing, east side)
    - There may be others but those would be low priority for Dr. Chronister.
    - 3309 and 3301 are recently renovated labs.
  - The only labs that must be completely renovated are those with old wood fume hoods, very old furnishings, and/or labs that don’t have any fume hoods.
  - A possible renovation strategy noted by Dr. Chronister is for the south side of south wing, level 2, to be used for future synthetic Chemistry Research labs, but

used initially as temporary teaching labs while teaching labs are being renovated. A new research lab can be designed to accommodate teaching while the teaching labs are being renovated, then converted to research, with little or no change; this could be ideal to keep the teaching labs going. Level benches that allow visibility initially and then adding overhead shelving can be considered, as well as glass (see-thru) fume hoods.

- It was emphasized that the teaching labs have to remain operational, either by providing a temporary swing lab space or by creating new permanent space. General Chemistry teaching is of special concern; they must remain operational regardless of where they are located. No down time for General Chemistry teaching labs is allowed, not even during the summer as the teaching labs run year round.

3A.03 Lab Planning and Programming:

A first pass of potential laboratory or building upgrades was presented; the main goal is to establish pattern or common language and create a menu from where the Working Group can prioritize laboratory types and decide what is critical, needed, or nice to have within the prescribed budget.

- Teaching Labs/Support:
  - Located on the first floor in order to minimize students going to upper floors.
  - 7 labs at 4 modules each; lab supports at 5 modules.
  - Lab to lab support ratio is 1.25.
  - Lab support is placed at ends of open labs to accommodate geometry of the shallow bay depth.
  - There may be other teaching labs in center wing. RBB will check space inventory to identify all instructional areas in the building.
- Research Labs:
  - Open suites with modules based on the structural building grid.
  - Modules were originally developed based on adapted MRB concepts that comply with the limitations of Pierce Hall's envelope. The goal is to create and utilize standard laboratory types for use by this project as well as other UCR projects.
- The building can accommodate 73 research modules (11'x24') 2 per floor, six (6) dedicated special purpose labs (1 module). The design team stated that it will be very difficult for these laboratories to work as teaching labs as they will be greatly compromised. Toilets:
  - Toilets must increase in size and will impact lab space. This must be taken into account while planning. ADA and gender neutral will be included.
- Third Floor Analysis:
  - Floor can accommodate 5 open lab suites; 2 at 5 lab modules, 2 at 7 lab modules and 1 at 3 lab modules.
  - 29 Research lab modules and 27 Research lab support modules.
  - Lab support /lab ratio: .93
- Second Floor Analysis:
  - Can accommodate 6 open lab suites, 2 at 5 lab modules, 3 at 6 lab modules and 1 at 3 lab modules.
  - 35 Research lab modules and 32 Research lab support modules.
  - Lab support/lab ratio: .91
- First Floor Analysis:

- Can accommodate 2 open Research lab suites with 2 at 6 lab modules.
- 12 Research lab modules and 15 Research lab support modules.
- Lab support/lab ratio: 1.25.

3A.04 Lab Program Summary:

- The first rough draft of program was presented as a possible build-out program that maximizes the laboratory space:
  - Total 50,479 Net S.F. and 140 fume hoods.
- The program was also developed to create maximum flexibility and allow for future capacity to add more fume hoods:
  - Total fume hood (FH) capacity is assessed to be 140 fume hoods; 36 hoods could be added if the building was built at maximum capacity for a total of 176 fume hoods.
  - Wet Type 1: Low density (not used).
  - Wet Type 2: Medium density: 1FH/2 modules with capacity to increase to 1 FH/module.
  - Wet Type 3: High density: 1FH/1 module with capacity to increase to 2 FH per module.
  - The Working Group finds it valuable to bring infrastructure to support future fume hoods into some labs but not include the equipment in the project. This will require shaft capacity analysis.
- The team was reminded that there is a fixed budget and renovating all laboratories with the current budget is unlikely.
- UCR asked that budget information to complete proposed renovations and the potential shortfall be identified to see if other funds could be allocated to the project. Although this is unlikely the team needs to explore this scenario.
- Currently efficiency is approximately 58%.
- Glen provided a diagram for each floor, to compare with tabular program; his findings are that floor area take offs confirm the tabular program.
  - Level 3 - 15,700 NSF
  - Level 2 - 18,300 NSF
  - Level 1 - 18,300 NSF
  - Total 52,300 NSF
- A detailed lab layout was presented for typical labs. Options for locating the Grad students/post docs were test fitted in different locations to allow for placing them inside the lab or in rooms located adjacent to the lab, within the lab zone.
- Working Group prefers not to have the students inside the lab module. Separate rooms are ideal.
- Support shared space is located at the end of the labs with access from the lab and the corridor; going through students and post doc offices to get to support areas is not desirable.
- Personnel ratios were discussed for Research: 1 PI to 2 post docs to 4 Graduate students appears to be a good ratio (this represents two lab modules).
- Current ratio for Chemistry: 34 PI/ 50 Post Docs /150 Grad Students, which results in an average team size of six (6).
- All MEP requirements and structural requirements were reviewed individual lab type criteria was outlined: natural gas, vacuum nitrogen will be building-wide gases. D.I.

water is assumed to be a central system to be piped to the individual labs; a local system will be used to polish the water at the sinks. Piped steam is not anticipated.

- Contractor furnished equipment was identified. UCR requested for the design team not to outfit all the labs but to initially provide minimum movable casework and allow more units to be added at a later date from other budgets.
- The only fixed elements in the lab will be fume hoods and the sinks. The team discussed the opportunity to include movable laboratory benches for maximum flexibility and also to comply with the requirement to be fully outfitted and operational on opening day.
- Support areas by room type were discussed.
  - All lab support to be dry if possible; movable equipment and casework should be specified for maximum flexibility.
  - Procedure rooms should be labeled Chemistry Procedure Rooms as they could be confused with Vivarium.
  - The Dark Room is typically one module assumes 1 sink and all movable equipment.
  - The Clean Work Room assumes 100% exhaust, positive pressure room and HEPA filters.
  - A Chemical Store Room is assumed to be required. A waste hood and sink and movable cabinets are included. Possibly add one in each floor.
- BSL 2 capabilities are anticipated to support the medical school in the future. In terms of lab design all labs meet BSL 2 criteria. They include cleanable surfaces, safety showers, sinks and defined entries and exits. EH&S may require gowning area and sink outside lab (ante-room). After further discussion the team agreed that BSL 2 does not require the ante-rooms and that a hooks to hang gowns should satisfy EH&S requirements.
- The Teaching Lab test fit was reviewed. They include:
  - 24 Students
  - 2 Fume hoods
  - Marker board
  - Team was asked to integrate instructor station into the design for maximum visibility.
  - DFS to provide alternate programs on the first floor to expand number of teaching labs. Working Group will also look to see how many labs would be needed with enrollment increases.

3A.05 Toilet Upgrades:

Roy Holman presented the Pierce Hall code requirements:

- Number of occupants was determined to be 1,335; this is based on ASF calculations.
- Existing restrooms are not compliant and need to be upgraded to current codes.
- Total requirement to support the existing Pierce Hall building: 23 toilets, 15 lavs and 9 drinking fountains.
- RBB test-fitted the third floor restrooms as they have the most restrictive conditions. Three options were presented:

  Option 1:
  - If renovated in place, the result will be a loss of 2 fixtures. Total fixtures: 8 WC, 2 urinals and 8 lavs.

- If the restroom expands in place it needs to take the adjacent area which is currently use for a cold room.
- This is the preferred option and is most efficient except for the lack of gender neutral toilet rooms.

Option 2:

- Four (4) gender neutral private restrooms and 2 multiple occupancy restrooms.
- This option takes the area of the cold room and one module from the adjacent lab; this is not ideal as that lab was recently remodeled.

Option 3:

- Eight (8) gender neutral private restrooms; this requires taking over adjacent lab. Also not desirable.

General Toilet comments:

- The team will look into single water closets with shared lavs in a common area.
- Accessing gender neutral restrooms from the corridor will only allow for 4 fixtures because of electrical closet and existing stair.
- RBB was asked to consider looking for restroom space in other areas of the building.
- Restrooms could be zoned mostly on the first floor since this area has the greatest number of students.

3A.06 ADA

- ADA will be reviewed by Ann Smith (UCR Accessibility Consultant) to save bin time.
- Path of Travel access from parking Lot 16, the closest disabled parking lot, may not meet DSA requirements. Loading dock is not publically accessible for ADA
- Preference is to have 1 Bench, 1 Sink and 1 Fume Hood per lab to meet accessibility requirements.. This needs to be discussed with Ann Smith during SD.

3A.07 Next Steps:

- Design team to:
  - Analyze fume hoods capacity by wing.
  - Analyze shaft capacity for additional fume hoods.
  - Define labs that can remain as they are.
- UCR to issue vacated rooms inventory to the design team.
- The team scheduled a meeting to do one final walk-through of the building to identify the occupancy and condition of the labs for April 15th at 11:15 a.m.
- Next meeting has been scheduled for April 26th.

The above constitutes our interpretation of matters discussed and decisions reached. Please notify the Architect within (7) seven days of the date of this document with any corrections or additions.

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April 15, 2016

OWNER REVIEW MEETING MINUTES #2B

PROJECT: University of California Riverside (UCR)
Pierce Hall Renovation
RBB Project No. 1611100
UCR Project No: 950511-958027

LOCATION: Conference Room 240-12

DATE / TIME OF MEETING: April 15, 2016 9:00 A.M. – 11:00 A.M.

DATE OF NEXT MEETING: TBD

PURPOSE: To begin programming the classroom addition

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2B .01 Introductions and goals

Work group members provided self-introductions.

- The project principles for the classroom project were discussed.
  - The work group is to create options for best use of the site, for a program as directed by UCR, within the prescribed budget.
  - Provide new general assignment classroom(s) with a combined total of 200 student stations in a central campus location
  - Create technologically-enhanced and flexibly-configured instructional space to support both undergraduate and graduate programs, particularly in STEM disciplines.
  - Address campus-wide shortfall for instructional space

2B.02 Site Analysis

Summary:

- Proposed site is the northwest corner of Pierce Hall between loading dock and Commons Mall.
- Site analysis discussed will provide a planning framework to determine best building location as it relates to future site utilization, land bank and Commons Mall accessibility.
- Analysis took into account operational issues related to truck traffic, loading dock, pedestrian circulation and on site emergency generator and nitrogen tanks.
- Connectivity between east/west campus pedestrian paths south of Bourns Hall leading to the HUB is essential.
- There is a stronger connection to the Commons Mall than to Pierce Hall as this is a centrally located classroom.
- Students should be separated from the loading dock.
- The proposed classroom site reserves the land between Pierce and Geology for a larger future addition. Refer to Exhibit A.

2B.03 Classroom Building Option Review

Option 5:

- The 2 story building is located against the west edge of the Commons Mall.
- Entrance is from the Commons Mall side.
- North walkway along Bourns Hall has been widened to create greater connectivity to the Mall and to student housing.
- Planning assumes that the nitrogen tanks will remain in place
- Emergency vehicle access width has been reduced from 24 feet to 14 feet. This needs to be reviewed with the Campus Fire Marshal. If the width for the emergency vehicle area is not wide enough, the width of the walkway maybe reduced or another solution may be necessary (e.g., relocate the nitrogen tanks).
- UCR's Physical Master Plan maintains access to the Pierce Hall Loading Dock from the service drive between Bookstore and HUB2.
- Option 5 accommodates 128 students in auditorium style seating on the first floor and 112 students on the second floor.
- Total area per floor is 3750 GSF. Total building area is 7,500 GSF.
- The ground floor classroom is a sloped floor with steps at every row of seating and accessibility ramps on the west side of the auditorium.

- Two entries are provided at the south side of the Auditorium.
- Plan reflects two gender neutral restrooms, an elevator, stairs and a ramp from the Mall.
- The second floor classroom is assumed to be flat and reconfigurable for different styles of learning with some storage at the west edge.
- IT/AV is located along the south side
- An alternate layout for the second floor was also presented with clusters of seats for eight students, for a total of 96 seats.
- Section A shows Pierce Hall and the new classroom building first floor aligned in this option. The floor is sloping, down from south to north on the first floor approximately 2'4",
- Section B shows entry at the same level from the Mall side, sloping down to the east end by 2'-4", level with the existing Pierce Hall first floor.

Option 6:

- The entrance faces the Commons Mall
- This option provides 200 seats in an auditorium style on one level with an area of 6,600 GSF.
- The larger floor plan in this option impacts more of the loading dock.
- Five gender neutral restrooms, AV/IT and electrical closets are aligned at the south edge along the north side of Pierce Hall.
- There is more circulation in this option due to the addition of an entrance vestibule at the west end of the auditorium. The space allow for queuing, drinking fountains, benches and to protect the classroom from the elements.
- The sloped floor concept has steps at every row of seats and accessibility ramp along the south side of the classroom.
- This scheme creates an ADA conflict for connectivity to the first floor of the existing Pierce Hall first floor. Team discussed the possibility of adding a small wheelchair lift.

General Comments on Classroom Options:

- Sloped floor STEM based classrooms should be 120 seats
- 80 seats is maximum for a flat classroom
- Remove storage from classroom
- Right-size AV/IT rooms
- Mechanical equipment is assumed to be on the roof or in the basement. The team agreed that the basement would be more expensive. The roof location will be most cost-efficient.

2B.04 Deliverables Discussion:

- RBB was asked to develop refined options and present information in a matrix that would list Pros and Cons for all aspects of the project; options will include:
  - One 200 seat, 1 story option
  - Two classrooms, 2- story with 120/80 seats each
  - Two classrooms: Rotated with entry from Mall
  - Two auditorium alternatives that show one row of seats per tier or two rows of seats per tier. Seating assumes fixed tables with movable chairs.
- Items to include in site analysis to make the case for the proposed location:
  - Land use and site capacity
  - Open space available on site

- Commons Mall Access and Loading Dock
- Cost
- Area
- Numbers of students accommodated in new classroom
- Other issues that need to be taken into consideration:
    - Capacity for future adaptability
    - Capacity to add a floor and assessment of impact of future structural code upgrades
    - Impact on future pedagogy
    - A clear separation of costs between fixed and movable equipment
    - Separate costs for widening east/west pedestrian walkway north of loading dock.

The above constitutes our interpretation of matters discussed and decisions reached. Please notify the Architect within (7) seven days of the date of this document with any corrections or additions.

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UC RIVERSIDE UNIVERSITY OF CALIFORNIA

RBB

April 27, 2016

OWNER REVIEW MEETING MINUTES #1C

PROJECT:	University of California Riverside (UCR) Pierce Hall Renovation RBB Project No. 1611100 UCR Project No: 950511-958027
LOCATION:	Conference Room 210-16
DATE / TIME OF MEETING:	Tuesday, April 26, 2016 12:00 P.M. – 2:00 P.M.
DATE OF NEXT MEETING:	Monday, May 16, 2016 1:00 P.M –4:00 P.M.
PURPOSE:	Pierce Hall Workgroup Detailed Project Program IT/AV Coordination

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1C.01 Classrooms
The design team proposed two options for classroom development. The first option is a one-story 200 seat slope floor classroom. The second option is two-story, with a ground-floor 120 seat sloped floor classroom, and an 80 seat second floor classroom with flat floor.

1C.02 Telecom Room Placements in Pierce Hall
Dan Martin with UCR proposed one telecom room per floor centrally located near the elevator. Minimum size will be 10' x 11' with three racks per room. Room placements must allow for all cable runs to not exceed 300 feet.

1C.03 Structured Cabling Distribution
Structured cabling would be distributed through the corridor system using cable trays. Laterals shall be supported by J hooks. Exposed cable trays in corridors may be considered if restricted ceiling heights proved problematic for access and serviceability.

1C.04 Above Ceiling Organization
UCR requested that the above ceiling interstitial space be organized with mechanical ductwork at the highest level, electrical systems below the ductwork, and plumbing at the lowest most accessible level.

1C.05 Current Infrastructure
The current infrastructure for voice and data utilizes substandard closets. It is the project goal to develop new Telecom rooms adjacent to or near the existing in soft office space.

1C.06 Structured Cabling
UCR standard is CAT6 System X. Fiber has already been delivered to the sub-sub-basement. Point of entry for the fiber is in the south wing of the sub-sub-basement.

1C.07 Telecom Power Systems
Telecom rooms shall be provided with emergency power. It is expected that each room will require two 20 amp NEMA 5 outlets per rack and a total of 6 circuits per room. Provide one convenience outlet on each wall for maintenance, and one POC for the fan coil in the room.

1C.08 Mechanical Requirements
Each rack is expected to generate 2000 BTUs per rack. Three racks will generate a total of 6000 BTUs for the room. It is expected that one and a half tons of cooling will be required per room. System would most likely be a split system similar to Mitsubishi and served from emergency power for 24/7 operation.

1C.09 Classroom
For the classroom it is expected that A/V components will dominate the space requirement. It is expected that 6 racks for AV Equipment will be required together with 1 Telecom rack. 7 to 8 homeruns are anticipated from the room. The preferred location for the classroom AV/Telecom room is within the classroom. It was agreed that a second-floor AV/Telecom room could serve the two-story scheme from a single location. It was estimated that approximately 160 SF would be required. Services would include support for assisted listening, Blu-ray DVD, video conferencing, LED flat screen displays, LCD projection.

1C.10 Proposed IT/Telecom Room Locations
First floor Room 1239 (BDF)
Second floor Room 2239 (IDF)
Third floor Room 3323A (IDF)

1C.11 IT Room Access
UCR prefers that corridor access to AV and/or IT rooms be provided to not disrupt the classroom functions.

1C.12 Classroom Seating.
For the sloped floor classroom it was discussed that there would be two rows of seats on each tier to facilitate collaboration between groups of students. No raised platform is required at the front of the classroom. This will maximize the wall space for whiteboard and projection screens.

1C.13 Minimum Vertical Wall Space in Classroom
A minimum of 15 feet of usable wall area is required at the front of the classroom. 6 1/2 feet of vertical height is the minimum required to the bottom of the projection screens for board space.

1C.14 Classroom Support Space
The two story concept provides Classroom Support space adjacent to the classroom.

1C.15 Perimeter Visual Displays
It is anticipated that 2 LED monitors on each side wall will be required, in addition to projection screens at the front of the classrooms. Projection screens are anticipated to be 12 feet on the diagonal and a 16 x 10 format.

1C.16 Structured Cabling Pathways
From the sub-sub-basement to the new IT room on the first floor provide 3 -3 inch conduits this will serve as the BDF (Building Data Frame) and 3 - 4 inch sleeves between the 1st and 2nd floor, and 2nd to 3rd floor accordingly, each appropriately fire stopped. Each of the BDF and IDF rooms shall be a minimum of 10' x 11'. One is required on each floor. Optimum configuration would be stacked vertically. Additionally, from the BDF room provide 3 - 3 inch conduits to the AV/Telecom room that will serve the classroom addition. Routing for the classroom is expected be via the basement level utility tunnel. Preference will be in conduit with pull boxes as required for long runs.

1C.17 A/V Equipment Budget
Dan Martin at UCR will prepare a list of anticipated equipment items required to service the classroom areas.

1C.18 Floor Grid for Power and Data
Within the classrooms it is anticipated that a grid layout for power and data will be developed at the floor to service the student workstation areas. The placements shall accommodate room reconfigurations of the student work areas.

1C.19 Next Steps

- UCR (Dan Martin) to provide equipment list narrative and budget for AV.
- RBB/NACG to locate BDF, and IDF rooms within the floor plans and resize the Classroom Addition AV /Telecom into a single room
- RBB to revise slope floor classroom seating to reflect two rows per tier.
- CTTV / Security / Access Controls will require discussion with Jim Ellis (UCR)
- Mass Notification Systems to be reviewed with Blythe Wilson (UCR)

The above constitutes our interpretation of matters discussed and decisions reached. Please notify the Architect within (7) seven days of the date of this document with any corrections or additions.

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April 27, 2016

OWNER REVIEW MEETING MINUTES #4A

PROJECT:	University of California Riverside (UCR) Pierce Hall Renovation RBB Project No. 1611100 UCR Project No: 950511-958027
LOCATION:	Conference Room 210-16
DATE / TIME OF MEETING:	Tuesday, April 26, 2016 2:00 P.M. – 4:45 P.M.
DATE OF NEXT MEETING:	Monday, May 16, 2016 1:00 P.M – 4:00 P.M.
PURPOSE:	Pierce Hall Workgroup Detailed Project Program Charrettes

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4A.01 Lab Renovation Priority
The design team identified three priority levels of renovation:
- Baseline Renovation MEP/ADA/Abatement 6,565 ASF
- Moderate Renovation baseline plus interior renovation 2,800 ASF
- Full Renovation baseline plus full interior renovation 45,580 ASF

The total impacted lab area of renovation is 55,215 ASF

4A.02 Budget in Advance of Cost Model
The laboratory planner (DFS) offered the following metrics for the three different levels of renovation in advance of the Cost Model to be prepared by the Cost Estimator:
- Baseline Renovation MEP/ADA/Abatement $2.6M
- Moderate Renovation baseline plus interior renovation $1.4M
- Full Renovation baseline plus full interior renovation $27.5M

Total budget for ASF of lab would be approximately $31.5 M. When adjusted to the building gross it would total $65.6M.
On completion of the Cost Model, prepared by C. P. O'Halloran, Capital Planning (UCR) will be responsible for preparing a business case analysis.
It was evident that $39M in project cost will not support the full master plan for renovation.

4A.03 Guiding Planning Principal - Offices
UCR reminded that the priority for Offices will be to be in support research programs.

4A.04 Lab Renovation Pattern Language
DFS summarized the differences in the pattern language for MRB in contrast to the pattern for Pierce Hall.
- Pierce Hall's shallow bay depth of approximately 26 feet does not permit the zoning used for the MRB programs. It results in lab support moved to the ends of the open lab suite.
- Pierce Hall laboratory planning module is 11 feet which is very good.
- Grad Students and Post Doc will be located next to but separate from the lab
- Research Lab to Lab Support is approximately 1:1 ratio
- First floor is proposed to have 9 teaching labs with an alternate for 7 that would favor additional research lab space
- Developing Teaching Labs that could become Research Labs with minimum renovation was to be studied (Eric Chronister)
- Labs will optimize flexibility through the use of moveable casework. This has an added benefit of differing cost to the researchers through grant funding.
- It was noted that Teaching Labs do not require the Graduate Student / Post Doc office areas.
- Excellent sightlines are required in Teaching Labs and hoods typically placed at the perimeter.
- Glass Hoods could allow for needed slight lines in Teaching if Research Lab was converted to Teaching.
- Research Labs larger than a Teaching Lab were not deemed desirable (Eric Chronister). Although open Labs were shown to be easily divisible by the addition of a wall.

4A.05 Lab Program

The current program was summarized as follows:

- Approximately 120 fume hoods in current program. This takes into account future additional hoods in the research spaces but not in teaching labs
- Separate fume hood systems for special corrosive labs are required for geo science. The most corrosive chemical is a combination of Nitric Acid and Hydrochloric Acid (Aqua Regia). Stainless Steel ductwork has proved inadequate. Plastic ductwork will be required. Special attention is required for corrosives in the Phoenix Valve, Hood, Ductwork and Fan Systems that will likely result in dedicated exhaust system.
- Special labs and or Procedure Rooms will be required for handling corrosive chemicals and explosive hazards.
- Specialized functions will be indentified in procedure rooms (a total of ten are anticipated)
- Single Lab Module research labs are identified (a total of seven are anticipated)
- Perimeter hood placements were deemed preferable.
- Peninsula results in more work surface; Island moves hoods to the perimeter and is less claustrophobic
- Corridor openings must be coordinated with the structural shear walls.
- 3’-6” entry doors are provided to labs typically.
- If possible recapture the short corridors to shared support.
- 8 ft hoods have been provided for teaching labs.
- Teaching Lab Support has been moved to be more centrally located at the first floor.

4A.06 Infrastructure Analysis – Restroom Options

Three restroom concepts were reviewed:

- Single use gender inclusive restrooms with toilet and sink in each, on three floors.
- Single use gender inclusive toilet stalls with shared public sinks, on three floors.
- Men’s and Women’s multi-stall restrooms on floors 1 and 3, and four gender inclusive restrooms with toilet and sink in each, on floor 2.

New direction was given:

Provide conventional Men’s and Women’s restrooms on each floor, with additional gender inclusive restroom immediately adjacent on each floor (in compliance with UCR Gender Inclusive Policy document dated 12/ 2015).

4A.07 Infrastructure Analysis – Matrix and Existing Condition Assessment

The Infrastructure Matrix has been revised to reflect current renovation metrics:

- 1) Baseline Renovation (MEP, ADA, Abatement)
- 2) Moderate Renovation (Baseline, Finishes, Casework)
- 3) Full Renovation

Floor plans have been updated to reflect the latest evaluation of condition, and occupied / unoccupied status. Some rooms that appear to be Baseline Renovation condition would still need Heavy Renovation since they are currently not being used as functioning Labs (e.g. existing classrooms). The floor plans show that the majority of existing Labs require Heavy Renovation

4A.08 Possible Phasing Strategy

The North Wing is anticipated to be Phase 1. The South Wing could provide added lab space without displacement if considered as Phase 2 or part of Phase 1. The Center Wing could be Phase 2 or 3. The budget constraints will likely limit the scope of work.

In reviewing the North Wing Third Floor Plan, where existing Research Labs are currently in use, a possible phasing strategy emerged:

1. Identify the space requirements for existing researchers in the North Wing, on all floors.
2. Identify temporary relocation areas within the South and Central Wings to relocate these functions.
3. Remodel the North Wing on all three floors, along with the Basement MEP systems.
4. Relocate displaced researchers into the remodeled North Wing, and repeat the process in either the South Wing or the Central Wing (as the budget allows).
5. It is presumed that the Classroom Addition, adjacent to the existing Loading Dock, could be constructed together with the North Wing remodeling in the same phase (to provide economy of scale for budget management).
6. It was suggested that the North Wing and South Wing could be remodeled in one phase (if existing programs in both wings could be relocated).

4A.10 Next Steps

- DFS to study island lab layout (with perimeter placed hoods) as an option to the Peninsula lab currently shown. The benefit would be a more open less claustrophobic appearance at the cost of some bench area, and the possibility of more easily converting between Teaching and Research configurations.
- DFS to study the shared lab support corridors to recover space if possible. Acceptance will be subject to structural implications through the existing shear walls.
- RBB to study alternate toilet room layout that provides conventional Men’s and Women’s restrooms on each floor, with additional gender inclusive restroom immediately adjacent on each floor.
- RBB/DFS to develop a phasing plan.

The above constitutes our interpretation of matters discussed and decisions reached. Please notify the Architect within (7) seven days of the date of this document with any corrections or additions.

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May 16, 2016

OWNER REVIEW MEETING MINUTES #5A

PROJECT:	University of California Riverside (UCR) Pierce Hall Renovation RBB Project No. 1611100 UCR Project No: 950511-958027
LOCATION:	Conference Room 210-16
DATE / TIME OF MEETING:	Monday, May 16, 2016 1:00 P.M. – 4:00 P.M.
DATE OF NEXT MEETING:	TBD
PURPOSE:	Pierce Hall Work Group Detailed Project Program Charrettes

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5A.01 Meeting Goals

- Review renovation options and establish a direction for the project that allows for an option that will balance the scope with the approved budget.
- Formulate a direction for the Tenant Improvement scope that aligns with the available budget.

5A.02 Project Principles and Guidelines

RBB Architects presented a recap of the initial project guidelines and principles:

- Develop two major research buildings simultaneously (Pierce and Batchelor). Both projects have State and non-State funded components.
- The main priority for both projects are research laboratories and research support spaces that will benefit faculty research programs and activities
- The greatest space need is for wet laboratories followed by dry laboratories.
- Solutions for the provision of office space, particularly as they refer to non-faculty related office space, should include the possibility of relocation to other facilities.
- It has been confirmed that the project funding available will not allow complete interior renovation; the work group is responsible to program spaces based on the following established priorities:
  - Research programs
  - Bring best value for researchers, faculty and students
  - Stay within the established budgets
  - Create standard and flexible space that optimizes the use of the building

5A.03 Lab Planning and Programming

Glen Berry, Lab Planner, reviewed feedback received though faculty questionnaires:

- An overview of all existing research and instructional laboratories in the building was provided and there was a short discussion about some of the prior space renovations and space assignments that have resulted in the current complement of programs and activities in Pierce Hall.
- Instructional labs are currently programmed for 24 students and not 32 as raised in one questionnaire response. The assumption for typical number of instructional lab stations a significant planning issue. The work group supported the more standard 24-station instruction lab for planning purposes.
- The instructional labs identified in the building are for General Chemistry. There is sufficient flexibility built into the instructional spaces to accommodate other lab-based teaching programs. Further discussion on the second floor instructional laboratories is suggested.
- Short-term and long-term locations of instructional laboratories within Pierce Hall were discussed. While the work group acknowledges that there is a general campus-wide need for instructional labs, the project direction is to design research labs that can be used initially as instructional labs; these could be converted to research labs in order to conform with the project's principles, which makes wet labs the highest priority followed by dry labs. The university will explore instructional laboratories in a broader context and in relationship to Pierce Hall.

5A.04 Building Evaluation Process Recap

RBB Architects presented a summary of the infrastructure assessment and building components evaluation and the results:

- Reviewed existing MEP systems to assess condition, failure potential, age of equipment and useful life.
- Checked for ADA compliance throughout the building
- Reviewed finishes
- Room by room casework evaluation
- Building envelope including window, roof and exterior wall for overall water intrusion and energy assessment.
- Toilets for ADA and fixture count compliance

- The priority levels for identifying the :
  - Baseline: ADA, MEP, Abatement
  - Moderate: Baseline, Finishes and Casework
  - Full Renovation: Complete Upgrade
- Results:
  - Overall building infrastructure condition is poor and in need of renovation; most systems are outdate and have lived beyond their useful life.
  - Toilets are not ADA or gender inclusive compliant; Current Uniform Plumbing Code requires a larger number of fixtures.
  - Building envelop requires upgrades (water intrusion, windows, roof and exterior doors)

5A.05 Toilet Options Review

Three restroom concepts were reviewed:

- RBB Architects presented the existing toilet layout and showed deficiencies; the toilets are not ADA compliant, they don't have the correct number of fixtures and they are not gender inclusive.
- Option 1: Single use gender inclusive restrooms with toilet and sink in each, on three floors.
- Option 2: Single use gender inclusive toilet stalls with shared public sinks, on three floors.
- Option 3 and preferred option: Men's and Women's multi-stall restrooms on all floors and one gender inclusive restrooms with toilet and sink on each floor; these will be located immediately adjacent to the main toilet rooms.
- Option 3 was deemed to be most efficient and conforms to UCR policies and will be incorporated into the program.

5A.06 Construction Timeline Discussion

The design team presented a timeline anticipated for the project development based on the scope to be included in each phase. The project scope was divided into two main categories: Shell and Core and Tenant Improvement development.

- Four phasing construction time lines were presented:
  - One phase: Total 24 months
    - All wings shut down for construction at once.
    - This is not desirable.
  - Two Phases: Total 30 Months
    - North and South Wing, all floors, basement MEP, classroom addition and loading dock: 12 Months

- o Center Wing all 3 floors, basement MEP and south wing 2 Floors, basement MEP: 18 Months
- o Working group will consider this option. Design team is to investigate the impact to the building occupants.

- The Working Group also discussed the phasing option to develop the south wing first since it only displaces one faculty member. Ability to find temporary space during the renovation is a challenge. One problem with the approach is increased cost to furnish new utility services to the south wing from the loading dock area. Concluded that Phase 1 needs to begin on the north side Three Phases: Total 40 months
  - o North Wing, 3 floors, basement MEP, classroom addition and loading dock: 12 Months
  - o Center Wing, all 3 floors, basement MEP: 18 Months
  - o South Wing, 2 floors, basement MEP: 10 Months
  - o The Working Group will consider this option, but the team acknowledged that construction duration has a strong impact on the budget.
- Six Phases: Total 58 months
  - o North Wing, 3 floors, Basement MEP, classroom addition, loading dock: 12 Months
  - o Center Wing, Phases 2A, 2B, 2C: 30 Months
  - o South Wing, Phases 3A, 3B: 16 Months
  - o This option is not acceptable; construction duration has a severe impact on the budget.

5A.07 Construction Phasing Discussion

A phasing strategy was presented with associated scope and timelines:

- Phase 1: Construction duration 12 Months
- Remodel north wing, 3 floors and basement MEP, construct classroom addition, reconfigure loading dock and renovate assignable lab area 16,440 asfPhase 2: Construction duration 10 Months
  - o 2A Remodel Center Wing, First Floor and Basement MEP, provide temporary, on grade HVAC and Power for Center Wing Floors 2 and 3, Complete remaining Teaching Labs on center wing first floor, Renovate assignable lab area 12,513 asf
  - o 2B Renovate Center Wing Second Floor connected to new MEP from Basement Renovated Assignable Lab Area 12,013 asf
    2C Renovate Center Wing Third Floor connected to new MEP from Basement, renovated Assignable Lab Area 12,063 asf
- Phase 3: Construction Duration 8 Months
  - o 3A Renovate South Wing Second Floor and Basement MEP, provide temporary, on grade HVAC and Power for South Wing First Floor, renovated assignable Lab Area 3,136 asf /Office Area 3,818 asf
    3B Renovate South Wing First Floor connected to new MEP from Basement, renovated assignable lab area 2,835 asf and Office Area 5,428 asf

5A.08 Budget Review

The team discussed the project budget; the following is a recap:

- Project resources are limited and fixed

- Improvements should be developed to ensure the greatest value for the investment
- UCR Project Budget as approved:
  - Classroom addition and MEP construction budget $28,455,000
  - Interior improvements construction budget $10,545,000
  - **Total Budget** **$39,000,000**
- Preliminary Rough Order of Magnitude (ROM) of $78.2 million was presented to the working group; RBB explained this is not a cost estimate but a cost guideline, and the numbers were developed by the cost consultant based on historical guidelines for lab renovations of similar size and scope, taking into account a regional cost factor for Riverside, assuming:
  - The entire building would be fully renovated for infrastructure and interior improvements.
  - Cost per SF of $645 for 121,000 GSF are for Pierce Hall specific program (Instruction and Research Labs)
  - 58 Months of Construction
- RBB Architects stated the ROM will become a cost estimate when the project direction is confirmed; these numbers will be revised based on the actual areas prioritize to be renovated to meet UCR's budget and are used for preliminary guidance only; a DPP estimate will be provided once the study is complete and the scope is defined.
- From the ROM received it is evident that the $39M in construction cost will not support the full tenant improvement renovation.
- ROM for the Infrastructure Upgrade (Shell and Core) reflects:
  - Shell & Core construction ROM:

North Wing	$ 5.3M
Center Wing	$ 12M
South Wing	$ 3.5M
Classroom Addition & Loading Dock	$ 7.5M
Total	**$ 28.3M**

  - UCR construction Budget: $ 28M
  - Current deficiency: $300k *

    * This amount is within the acceptable range for the level of development)
  - Shell & Core scope included in the construction ROM:
    - MEP replacement in basement, vertical distribution, adjacent to corridors
    - Phoenix Valves for Variable Volume supply and return, and ducts For room air supply
    - Corridor renovations – all utilities and finishes
    - Exterior glazing and roofing
    - Ground level water proofing
    - Sprinklers throughout
    - Abatement, ADA upgrades and toilets
    - Elevator
- ROM for the Laboratory Tenant Improvement Upgrade reflects:
  - Tenant Improvement Construction cost ROM: $530/ASF
  - UCR construction budget: $10.5M
  - Area that can be renovated with the available budget: 20,000 ASF (or 35% of the total lab area; determined that the available budget would cover the

interior improvements to the north and south wings only, and not the interior improvements of the center wing. The infrastructure upgrades of the center wing would facilitate future interior improvements when funds become available.
    - Current Lab ASF: 57,500 ASF
    - Tenant Improvement Scope included in the ROM:
        - Hoods and Sinks
        - Finishes
        - Casework
        - Walls
        - Ceilings and lighting
        - MEP within the Labs
- The working group discussed the best way to use the available budget for the TI portion. The team agrees that doing one wing at the time is the most efficient use of the budget. One viable option is to renovate all labs on the north wing three floors, and all labs on the south wing in two floors) .
- The design team was asked to test-fit the south wing for potential lab development. The total area for this scope is approximately 20,000 ASF, which would meet the current restraints.

5A.09 DPP Completion Schedule Review

RBB had anticipated submitting the DPP First Draft the first week of June. This schedule was revised based on the Working Group's request for the design team to refine the current options, which will be presented as an interim report to the Vice-Chancellor and Provost for direction, prior to completing the DPP. Target DPP completion date is early July; exact date to be determined once feedback is received by the design team.

5A.10 Next Steps

- Design For Science was asked to test the south wing lab layout for research labs.
- UCR requested for the design team to issue a summary of the options presented, listing pros and cons, Rough Order of Magnitude and an assessment on the schedule impacts.
- Relocation of key researchers is a critical condition of a successful renovation. Developing a plan for their relocation in MRB (if construction is complete by then) or moving them to labs in Pierce Hall already completed in previous phases are potential solutions that need to be verified by UCR.
- UCR has requested an additional workshop to recap all decisions made; at that time the design team will provide a preliminary review of the material to be shared with the Vice-chancellor and Provost.

The above constitutes our interpretation of matters discussed and decisions reached. Please notify the Architect within (7) seven days of the date of this document with any corrections or additions.

RBB ARCHITECTS INC

UC RIVERSIDE UNIVERSITY OF CALIFORNIA

RBB

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June 10, 2016

OWNER REVIEW MEETING MINUTES #6A

PROJECT:	University of California Riverside (UCR) Pierce Hall Renovation RBB Project No. 1611100 UCR Project No: 950511-958027
LOCATION:	Conference Room 210-16
DATE / TIME OF MEETING:	Friday, June 10, 2016 9:00 A.M. – 11:00 A.M.
DATE OF NEXT MEETING:	TBD
PURPOSE:	Pierce Hall Workgroup DPP Charrettes - LAB

DISTRIBUTION AND ATTENDANCE - Latter signified by '(A)' Part Time signified by '(PT)'

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6A.01 Meeting Goals

The team discussed the meeting goals:

- Review renovation options to balance scope and budget and establish a final direction for the project.
- Define the project scope for the Tenant Improvement portion of the renovation based on the available budget.
- Discuss Project assumptions:
    - Area analysis for Labs and Offices, by Wing and by Floor
    - Phasing strategy to achieve Infrastructure Upgrades
    - Phasing strategy timelines
    - Update of Cost Guidelines
    - Rough Order of Magnitude
- Discuss renovation options and define areas for renovation
- Discuss types of Research Laboratories required, and how to balance laboratory type and fume hood density.
- Pros and cons for the options developed to date
- Discuss recommendations

6A.02 Toilet Options Review

Preferred Toilet option was reviewed:

- Renovation will include men's and women's multi-stall restrooms on all floors and one gender inclusive restroom with toilet and sink on each floor; these will be located immediately adjacent to the main toilet rooms in the building core. This option was confirmed to be most efficient and conforms to UCR policies.

6A.03 Construction Phasing Timeline Discussion

RBB presented a revised timeline for construction.

- Three phasing construction timeline options were presented:
    - One phase: Total 24 months
        - o All wings shut down for construction at once.
        - o This is not a good option for the University as it would displace too many programs and there is no space available to relocate them.
    - Two Phases: Total 30 Months
        - o North Wing, all 3 floors, Basement., MEP and South Wing 2 Floors, Basement., MEP, Classroom Addition and Loading Dock: 18 months
        - o Center Wing all three Floors, Basement MEP: 12 months
        - o The Working Group initially disregarded this option. After some discussion all agreed this was the best option; the renovation strategy includes research labs that would initially be used for temporary teaching labs while teaching labs are being renovated and later converted to research, with little or no change; this could be ideal to keep the teaching labs operational and minimize disruption.
    - Three Phases: Total 40 Months

- North Wing all 3 floors, Basement, MEP, Classroom Addition, Loading Dock: 12 Months
- South Wing Two Floors, Basement, MEP: 10 Months
- Center Wing Three Floors, Basement, MEP: 18 Months
- The Working Group initially preferred this option; this was based on not having enough instructional labs for pre-requisite courses required for graduation, which could impact the student's ability to finish in four years. This option was disregarded based on discussions in option 2 which assumes temporary use of research labs for instruction, until the instructional labs are complete.

- The 58 month option will not be considered as a viable option but will be included in the DPP as one of the options reviewed and disregarded.
- The phasing strategy was discussed; initially the Working Group suggested the south wing be renovated first because it would have least impact to the operations of the dept. as most of the rooms will be vacant. After some discussion the team agreed that the north wing and classroom scope should be constructed first.

6A.04 Program Review

- The Working Group discussed the possibility to upgrade the south wing office area and convert it into Classroom space.
- Another possible use for this area is new offices or conference space to support research programs. It was decided that one - 15 seat conference room should be added to the program.

6A.05 Budget Review

The team reiterated previously presented project budget assumptions:

- Project resources are limited and fixed
- Improvements should be developed to ensure the greatest value for the investment
- Approved UCR Project Budget:
  - Classroom addition and MEP construction budget $28,455,000
  - Interior improvements construction budget $10,545,000
  - **Total Budget** **$39,000,000**
- Cost Guideline Tenant Improvement
  - Estimate= $530/ASF $10.5 M ÷ $530/ASF = 20,000 ASF
  - Current Lab ASF = 57,500 ASF
  - Area that can be renovated with the available budget is 20,000 ASF (or 35% of the total lab area). Current Lab ASF: 57,500 ASF
- When providing the final cost analysis, the opinion of probable cost must include total project costs, inclusive of all soft costs. UCR will assist RBB in gathering this information. Sufficient breakdown of all costs must be provided for UCR to have most flexibility in retrieving individual line item costs.

6A.06 MEP / Hoods Discussion

- The team discussed impact to the existing constant volume fume hoods once the Phoenix valves are added and the system is switched to VAV. It is possible that a percentage of them, especially in the center wing, may have to be replaced but this was not confirmed by the engineering team.

6A.07 Schedule Review

- Initial Draft of the DPP will be submitted as an interim report to the Vice-Chancellor and Provost for direction; RBB to issue it on June 24th.
- Estimated Schematic Design start is August or early September 2016.
- Start of construction is August 2017.

The above constitutes our interpretation of matters discussed and decisions reached. Please notify the Architect within (7) seven days of the date of this document with any corrections or additions.

RBB ARCHITECTS INC

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	AS-1 Air Separator
COMPONENT LOCATION:	Roof South wing
AREA SERVED:	Chilled industrial water
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	C-1 CR Refrigeration
COMPONENT LOCATION:	Penthouse
AREA SERVED:	Cold Room
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	
MANUFACTURER:	COPELAND
SERIAL NO:	U508WIC04
MODEL NO:	
CAPACITY:	14,000 BTU/hr
ACTION REQUIRED:	No Action Req'd
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: BTU/hr indicated per as-built drawing. Serve Rm 3316

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	C-2 CR Refrigeration
COMPONENT LOCATION:	Penthouse
AREA SERVED:	Cold Room
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	
MANUFACTURER:	COPELAND
SERIAL NO:	U508WIC05
MODEL NO:	
CAPACITY:	14,000 BTU/hr
ACTION REQUIRED:	No Action Req'd
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: BTU/hr indicated per as-built drawing. Serve Rm 3316

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	CC-1 Cooling Coil
COMPONENT LOCATION:	B05
AREA SERVED:	South Wing
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Trane
SERIAL NO:	
MODEL NO:	Series W
CAPACITY:	243 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	CC-2 Cooling Coil
COMPONENT LOCATION:	B02
AREA SERVED:	Central Area
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Trane
SERIAL NO:	
MODEL NO:	Series W
CAPACITY:	816 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 4/12/2016

COMPONENT:	CC-3 Cooling Coil
COMPONENT LOCATION:	Basement North Wing
AREA SERVED:	North Wing
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Chilled Water Pump #1
COMPONENT LOCATION:	Roof South wing
AREA SERVED:	Chilled industrial water
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Chilled Water Pump #2
COMPONENT LOCATION:	Roof South wing
AREA SERVED:	Chilled industrial water
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Chiller - No tag
COMPONENT LOCATION:	Roof South wing
AREA SERVED:	Chilled industrial water
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	Carrier
SERIAL NO:	
MODEL NO:	30GN080-610
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Chiller - No tag
COMPONENT LOCATION:	Roof South wing
AREA SERVED:	Chilled industrial water
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	Carrier
SERIAL NO:	
MODEL NO:	30GN080-610
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Chiller - No Tag
COMPONENT LOCATION:	Roof North Wing
AREA SERVED:	
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Condensate meter
COMPONENT LOCATION:	B02
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	CADILLAC
SERIAL NO:	83663
MODEL NO:	G
CAPACITY:	2"
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: lbs/hr indicated per as-built drawing. Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Condensing Unit - No tag
COMPONENT LOCATION:	
AREA SERVED:	
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Condensing Unit - No tag
COMPONENT LOCATION:	
AREA SERVED:	
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	AMANA
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Condensing Unit - No tag
COMPONENT LOCATION:	
AREA SERVED:	
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Condensing Unit - No tag
COMPONENT LOCATION:	
AREA SERVED:	
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	RHEEM
SERIAL NO:	5733F239613712
MODEL NO:	RAMA-048 JAZ
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Condensing Unit - No tag
COMPONENT LOCATION:	
AREA SERVED:	
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	AMANA
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Condensing Unit - No tag
COMPONENT LOCATION:	
AREA SERVED:	
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Cooling Tower
COMPONENT LOCATION:	
AREA SERVED:	
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	CR-1 Cond Ret Unit
COMPONENT LOCATION:	B02
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	55 gpm ea
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: GPM indicated per as-built drawing. Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	CU-1 Cold Rm Clg Unit
COMPONENT LOCATION:	Cold Rm
AREA SERVED:	Cold Room
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	
MANUFACTURER:	RUSSELL
SERIAL NO:	
MODEL NO:	FL46-180
CAPACITY:	18,000 BTU/hr
ACTION REQUIRED:	No Action Req'd
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: BTU/hr indicated per as-built drawing. Serve Rm 3418

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	CU-2 Cold Rm Clg Unit
COMPONENT LOCATION:	Cold Rm
AREA SERVED:	Cold Room
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	
MANUFACTURER:	RUSSELL
SERIAL NO:	
MODEL NO:	FL46-180
CAPACITY:	18,000 BTU/hr
ACTION REQUIRED:	No Action Req'd
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: BTU/hr indicated per as-built drawing. Serve Rm 3418

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	E-22 Fan
COMPONENT LOCATION:	B05
AREA SERVED:	Tunnel
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	American St.
SERIAL NO:	
MODEL NO:	
CAPACITY:	6,700 CFM
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-1 exhaust fan
COMPONENT LOCATION:	Roof Central Area
AREA SERVED:	General exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Repair
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-2 specialty exhaust
COMPONENT LOCATION:	Roof Central Area
AREA SERVED:	Specialty exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Repair
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-3 exhaust fan
COMPONENT LOCATION:	Roof North Wing
AREA SERVED:	General exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	Tri-Stack
SERIAL NO:	6118C-1
MODEL NO:	T20025 NSTSFR
CAPACITY:	8,500
ACTION REQUIRED:	Repair
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-4 fume exhaust
COMPONENT LOCATION:	Roof Central Area
AREA SERVED:	Fume exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-5 fume exhaust
COMPONENT LOCATION:	Roof Central Area
AREA SERVED:	Fume exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-6 fume exhaust
COMPONENT LOCATION:	Roof Central Area
AREA SERVED:	Fume exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-7 fume exhaust
COMPONENT LOCATION:	Roof Central Area
AREA SERVED:	Fume exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-8 fume exhaust
COMPONENT LOCATION:	Roof North Wing
AREA SERVED:	Fume exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-9 fume exhaust
COMPONENT LOCATION:	Roof North wing
AREA SERVED:	Fume exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-10 fume exhaust
COMPONENT LOCATION:	Roof South Wing
AREA SERVED:	Fume exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF-11 fume exhaust
COMPONENT LOCATION:	Roof South Wing
AREA SERVED:	Fume exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF 3424 fume exhaust
COMPONENT LOCATION:	Roof North Wing
AREA SERVED:	Fume exhaust
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF N-14 exhaust
COMPONENT LOCATION:	Roof North Wing
AREA SERVED:	General exhaust
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF N-15 exhaust
COMPONENT LOCATION:	Roof North Wing
AREA SERVED:	General exhaust
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	GP Fan
SERIAL NO:	C-3798
MODEL NO:	222
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	EF No Tag specialty exhaust
COMPONENT LOCATION:	Roof Central Area
AREA SERVED:	Specialty exhaust
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	MK Plastic
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Repair
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	ET-1 Expansion Tank
COMPONENT LOCATION:	Roof South wing
AREA SERVED:	Chilled industrial water
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	HC-1 Heating Coil
COMPONENT LOCATION:	B05
AREA SERVED:	South Wing
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Trane
SERIAL NO:	
MODEL NO:	Series W
CAPACITY:	72 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	HC-2 Heating Coil
COMPONENT LOCATION:	B02
AREA SERVED:	Central Area
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Trane
SERIAL NO:	
MODEL NO:	Series W
CAPACITY:	113 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 4/12/2016

COMPONENT:	HC-3 Heating Coil
COMPONENT LOCATION:	Basement North Wing
AREA SERVED:	North Wing
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	HE-1 Heat Exchanger
COMPONENT LOCATION:	B02
AREA SERVED:	Htg Hot Wat
DATE OF INSTALLATION:	2002
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	Armstrong
SERIAL NO:	4686TS
MODEL NO:	WS-149-2-2
CAPACITY:	330 gpm
ACTION REQUIRED:	No Action Req'd
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: GPM indicated per as-built drawing. Service Life = 24 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-1 CHW pump
COMPONENT LOCATION:	B02
AREA SERVED:	Chilled Wat
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	PACO
SERIAL NO:	PRO#788-001852
MODEL NO:	
CAPACITY:	530 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: 15 Hp, 200V/60Hz/3 Ph; GPM per as-built. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-2 CHW pump
COMPONENT LOCATION:	B02
AREA SERVED:	Chilled Wat
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	PACO
SERIAL NO:	PRO#788-001852
MODEL NO:	
CAPACITY:	530 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: 15 Hp, 200V/60Hz/3 Ph; GPM per as-built. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-3 HHW pump
COMPONENT LOCATION:	B02
AREA SERVED:	Htg Hot Wat
DATE OF INSTALLATION:	2002
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	Peerless
SERIAL NO:	
MODEL NO:	3x3 4380
CAPACITY:	165 gpm
ACTION REQUIRED:	Repair
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: GPM indicated per as-built drawing. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-3 RO Pump
COMPONENT LOCATION:	
AREA SERVED:	
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-4 HHW pump
COMPONENT LOCATION:	B02
AREA SERVED:	Htg Hot Wat
DATE OF INSTALLATION:	2002
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	Peerless
SERIAL NO:	
MODEL NO:	3x3 4380
CAPACITY:	165 gpm
ACTION REQUIRED:	Repair
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: GPM indicated per as-built drawing. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 4/12/2016

COMPONENT:	P-5 CHW pump
COMPONENT LOCATION:	Basement North Wing
AREA SERVED:	Chilled Wat
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 4/12/2016

COMPONENT:	P-6 CHW pump
COMPONENT LOCATION:	Basement North Wing
AREA SERVED:	Chilled Wat
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 4/12/2016

COMPONENT:	P-7 HHW pump
COMPONENT LOCATION:	Basement North Wing
AREA SERVED:	Htg Hot Wat
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-7 recirc pump
COMPONENT LOCATION:	Roof South wing
AREA SERVED:	Chilled industrial water
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 4/12/2016

COMPONENT:	P-8 HHW pump
COMPONENT LOCATION:	Basement North Wing
AREA SERVED:	Htg Hot Wat
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-8 RO Pump
COMPONENT LOCATION:	
AREA SERVED:	
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Abandoned - To be Demolished

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	PHC-2 Pre-Heating
COMPONENT LOCATION:	B02
AREA SERVED:	Central Area
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Trane
SERIAL NO:	
MODEL NO:	Series W
CAPACITY:	188 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 4/12/2016

COMPONENT:	PHC-3 Pre-Heating
COMPONENT LOCATION:	Basement North Wing
AREA SERVED:	North Wing
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	PRV-1
COMPONENT LOCATION:	B02
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	1,800 lbs/hr
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: lbs/hr indicated per as-built drawing. Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	PRV-2
COMPONENT LOCATION:	B02
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	3,150 lbs/hr
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: lbs/hr indicated per as-built drawing. Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	PRV-3
COMPONENT LOCATION:	B02
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	6,200 lbs/hr
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: lbs/hr indicated per as-built drawing. Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	PRV-4
COMPONENT LOCATION:	B02
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	540 lbs/hr
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: lbs/hr indicated per as-built drawing. Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	PRV-5
COMPONENT LOCATION:	B02
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	220 lbs/hr
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: lbs/hr indicated per as-built drawing. Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	S-1 Fan
COMPONENT LOCATION:	B05
AREA SERVED:	South Wing
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Trane
SERIAL NO:	
MODEL NO:	40-AF-ARR-3
CAPACITY:	33,000 CFM
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	S-2 Fan
COMPONENT LOCATION:	B02
AREA SERVED:	Central Area
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Trane
SERIAL NO:	
MODEL NO:	60-AF-ARR-3
CAPACITY:	88,000 CFM
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 4/12/2016

COMPONENT:	S-3 Fan
COMPONENT LOCATION:	Basement North Wing
AREA SERVED:	North Wing
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	60,000 CFM
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Static dampers
COMPONENT LOCATION:	Various Zones
AREA SERVED:	Various Zones
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Demolish mixed air flow static dampers - not required by new system

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Steam Flow Trap
COMPONENT LOCATION:	B02
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: lbs/hr indicated per as-built drawing. Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Steam Vent - No Tag
COMPONENT LOCATION:	Roof North Wing
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Steam Vent - No Tag
COMPONENT LOCATION:	Roof North Wing
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	T-1 Hot Wat Tank
COMPONENT LOCATION:	B02
AREA SERVED:	Htg Hot Wat
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Advance Tank
SERIAL NO:	15381
MODEL NO:	Horizontal
CAPACITY:	90 gal
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Service Life = 30 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	T-2 Control Air Tank
COMPONENT LOCATION:	B02
AREA SERVED:	HVAC Controls
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Advance Tank
SERIAL NO:	15362
MODEL NO:	Vertical
CAPACITY:	60 gal
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Remaining pneumatic controls to be demolished. All HVAC controls shall be DDC.

MECHANICAL DEFICIENCY TABULATION

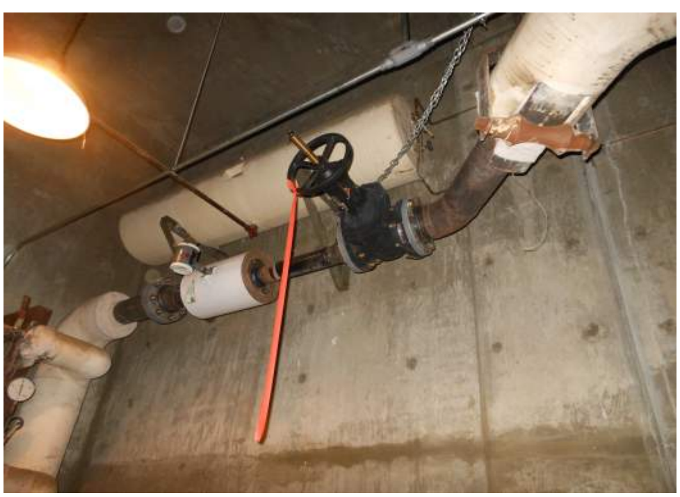
FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	T-3 Flash Tank
COMPONENT LOCATION:	B02
AREA SERVED:	Steam Syst
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	Horizontal
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: No available record drawings. Service Life = 30 yrs.



MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Terminal Reheat Coils
COMPONENT LOCATION:	Various Zones
AREA SERVED:	Various Zones
DATE OF INSTALLATION:	2000
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	
ACTION REQUIRED:	Repair
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS: No available record drawings. Service Life = 20 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	V-1 Fan
COMPONENT LOCATION:	B05
AREA SERVED:	Elec Rm 304
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	American St.
SERIAL NO:	H
MODEL NO:	2V18
CAPACITY:	10,000 CFM
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Service Life = 25 yrs.

MECHANICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	V-2 Fan
COMPONENT LOCATION:	B02
AREA SERVED:	Elec Rm 301
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Trane
SERIAL NO:	
MODEL NO:	Utility 22 BI
CAPACITY:	4,500 CFM
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Service Life = 25 yrs.

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Air Compressor #1
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Comp Air
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	H
MANUFACTURER:	Speed Air
SERIAL NO:	
MODEL NO:	37180
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS:

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Air Compressor #2
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Comp Air
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	H
MANUFACTURER:	Champion
SERIAL NO:	
MODEL NO:	HR10-12
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS:

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Air Compressor
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Comp Air
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	15 hp
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. 20 Hp 256T

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	AT-1 Air Tank
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Comp Air
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	400 gal
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS:

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Chilled Ind Wat Cooler
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Cooling Wat
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	600 gal
ACTION REQUIRED:	
SEVERITY RATING:	

COMMENTS: Not Seen.

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Gas meter
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Gas Sys
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	2 1/2" 2psi
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Per Facility meter does not work.

PLUMBING DEFICIENCY TABULATION

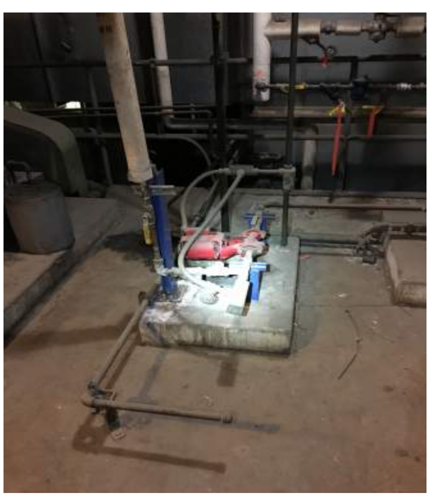
FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-1 Dom HW Ret Pump
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Hot Wat Ret
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	B&G
SERIAL NO:	106189
MODEL NO:	Series 100 L50
CAPACITY:	5 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. 1/12Hp 115V 1.75A



PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-2 Sump Pump
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	San Waste
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Gorman Rupp
SERIAL NO:	1088022
MODEL NO:	81
CAPACITY:	50 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. 1/2Hp 3450 RPM

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-3 Sump Pump
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	San Waste
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Gorman Rupp
SERIAL NO:	915806
MODEL NO:	81
CAPACITY:	50 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. 1/2Hp 3450 RPM

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-4 Sump Pump
COMPONENT LOCATION:	Equip Rm B05
AREA SERVED:	Storm Drain
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Gorman Rupp
SERIAL NO:	595199
MODEL NO:	81
CAPACITY:	50 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing.

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	P-5 Sump Pump
COMPONENT LOCATION:	Equip Rm B05
AREA SERVED:	Storm Drain
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Gorman Rupp
SERIAL NO:	465328
MODEL NO:	81
CAPACITY:	50 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing.

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Sprinkler Main
COMPONENT LOCATION:	Equip Rm B05
AREA SERVED:	Fire Riser
DATE OF INSTALLATION:	
REMAINING SERVICE LIFE:	
OVERALL SEVERITY:	M
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	4"
ACTION REQUIRED:	No Action Req'd
SEVERITY RATING:	Med.-Fair (Rec. to replace on next failure)

COMMENTS:

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	ST-1 Still
COMPONENT LOCATION:	Penthouse
AREA SERVED:	Distilled Wat
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	240 gph
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Observed not working.

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Still tank
COMPONENT LOCATION:	Penthouse
AREA SERVED:	Distilled Wat
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	300 gal
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Capacity indicated per as-built drawing. Observed not working.

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Sump Pump
COMPONENT LOCATION:	North Wing
AREA SERVED:	Storm Drain
DATE OF INSTALLATION:	1965
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Gorman Rupp
SERIAL NO:	712193
MODEL NO:	81
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS:

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Sump Pump
COMPONENT LOCATION:	North Wing
AREA SERVED:	Storm Drain
DATE OF INSTALLATION:	1965
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	Gorman Rupp
SERIAL NO:	712192
MODEL NO:	81
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS:

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	VC-1 Vacuum Pump
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Vac syst
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	IR
SERIAL NO:	30T 917387
MODEL NO:	20VX15
CAPACITY:	15 hp
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: (2) vac pumps seen.

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	VT-1 Vacuum Tank
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Vac syst
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	120 gal
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS:

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	Water meter
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Dom Wat
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	
SERIAL NO:	
MODEL NO:	
CAPACITY:	4" conn
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS: Per Facility meter does not work.

PLUMBING DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: ME ENGINEERS

DATE: 3/17/2016

COMPONENT:	WH-1 Water Heater
COMPONENT LOCATION:	Equip Rm B02
AREA SERVED:	Hot Wat Sys
DATE OF INSTALLATION:	1964
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	AERCO
SERIAL NO:	
MODEL NO:	1001
CAPACITY:	2.5 gpm
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (Rec. replacement asap)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	3DH DISC.SW
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	EATON
SERIAL NO:	
MODEL NO:	
CAPACITY:	400A 208V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	3M DISC. SW
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	GE
SERIAL NO:	
MODEL NO:	NP266226
CAPACITY:	200A 208V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	3N DISC. SW
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	GE
SERIAL NO:	
MODEL NO:	NP266226
CAPACITY:	200A 208V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	CB EM POWER
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	
CAPACITY:	150A 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	CB FOR EM 1,2,4
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	
CAPACITY:	125A 208V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	CB FOR EM PNLS
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	
CAPACITY:	125A 208V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	CB FOR REF IN 2443A
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	
CAPACITY:	20A 208V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	DIST SWBD #1
COMPONENT LOCATION:	SUB BSM ERM#1
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	S109759-LA
MODEL NO:	CBI
CAPACITY:	1600A 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	DIST.SWBD#2
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	S109760-LA
MODEL NO:	CBI
CAPACITY:	2500A 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	DIST.SWBD#3
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	S109761-LA
MODEL NO:	CBI
CAPACITY:	2500A 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	DISTR SWBD #4
COMPONENT LOCATION:	SUB BSM NW ERM
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	LA-GA29495
MODEL NO:	NP22587-3
CAPACITY:	2500A 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	EMERGENCY GENERATOR
COMPONENT LOCATION:	NW SUB BSM AREAWAY
AREA SERVED:	SW+CW+NW+SE
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	L
MANUFACTURER:	KATO LIGHT
SERIAL NO:	
MODEL NO:	D95FPJ4
CAPACITY:	95KW 118.7KVA 208/120 3P4W
ACTION REQUIRED:	Other
SEVERITY RATING:	Low-Good (=> 5 yr life)

COMMENTS: Remove and reuse somewhere else in the campus.

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	FACP 4020
COMPONENT LOCATION:	SUB BSM ERM#1
AREA SERVED:	SW+CW+NW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	1-2 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	SIMPLEX
SERIAL NO:	
MODEL NO:	4020
CAPACITY:	
ACTION REQUIRED:	Replace
SEVERITY RATING:	Med.-Fair (2-5 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	FACP 4100U
COMPONENT LOCATION:	SUB BSM ERM#1
AREA SERVED:	SW+CW+NW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	L
MANUFACTURER:	SIMPLEX
SERIAL NO:	
MODEL NO:	4100U
CAPACITY:	
ACTION REQUIRED:	Other
SEVERITY RATING:	Low-Good (=> 5 yr life)

COMMENTS: We recommend using the 4100U FACP.

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	G&W SW#1
COMPONENT LOCATION:	SUB BSM ERM#1
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	G&W
SERIAL NO:	783-471
MODEL NO:	RAM4354
CAPACITY:	400A/4160V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	G&W SW#2
COMPONENT LOCATION:	TUNNEL CW
AREA SERVED:	CW+NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	G&W
SERIAL NO:	783-472
MODEL NO:	RAM4354
CAPACITY:	400A 4160V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	GEN. ATS PNL
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	SW+CW+NW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	5-10 yrs
OVERALL SEVERITY:	L
MANUFACTURER:	ZENITH
SERIAL NO:	
MODEL NO:	MX-200
CAPACITY:	260A 208 3P 4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	Low-Good (=> 5 yr life)

COMMENTS: Could be utilized somewhere else in the campus.

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	LIGHTING THROUGHOUT
COMPONENT LOCATION:	ENTIRE BUILDING
AREA SERVED:	ENTIRE BLDG
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	UNKNOWN
SERIAL NO:	UNKNOWN
MODEL NO:	UNKNOWN
CAPACITY:	NOT APPLICABLE
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS: Lighting fixtures are obsolete and in poor condition.

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	LOAD CENTER-UNKNOWN
COMPONENT LOCATION:	CW- 2378
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	QOC 442L
CAPACITY:	100A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	LOAD CENTER-UNKNOWN
COMPONENT LOCATION:	NORTH ELEC. CLOSET
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	QO8-16
CAPACITY:	100A 120/240 1P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	MCC
COMPONENT LOCATION:	SUB BSM CW
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	S109763LA
MODEL NO:	CCP-2
CAPACITY:	1200A 208V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1A
COMPONENT LOCATION:	SOUTH CORRIDOR
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1B
COMPONENT LOCATION:	SOUTH CORRIDOR
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1C
COMPONENT LOCATION:	C-MIDDLE/1404
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1D
COMPONENT LOCATION:	C-MIDDLE CORRIDOR
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1E
COMPONENT LOCATION:	SOUTH/RM 1200
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-12-4L
CAPACITY:	100A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1F
COMPONENT LOCATION:	C-MIDDLE/CORRIDOR
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1H
COMPONENT LOCATION:	SOUTH/RM 1201
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1K
COMPONENT LOCATION:	C-MIDDLE
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1L
COMPONENT LOCATION:	C-MIDDLE/1404
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1M
COMPONENT LOCATION:	MIDDLE/1404
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1N
COMPONENT LOCATION:	NORTH CORRIDOR
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	SL-LA-29495-IT14
MODEL NO:	NEB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1P
COMPONENT LOCATION:	NORTH CORRIDOR
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	SL-LA-29495-ITI5
MODEL NO:	NEB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1R
COMPONENT LOCATION:	NORTH CORRIDOR
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	SL-LA-29495-IT13
MODEL NO:	NEB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 1S
COMPONENT LOCATION:	ROOM 1434
AREA SERVED:	NW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	SL-LA-29495-IT8
MODEL NO:	NEB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2A
COMPONENT LOCATION:	2ND FLR-SOUTH CORR.
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2B
COMPONENT LOCATION:	2ND FLR-SOUTH CORR.
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2C
COMPONENT LOCATION:	CW RM 2409
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2CA
COMPONENT LOCATION:	CW ROOM 2404
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	QOC-20
CAPACITY:	100A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2C-L
COMPONENT LOCATION:	CW
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	QO430-40RB
CAPACITY:	200A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2D
COMPONENT LOCATION:	CW/CORRIDOR
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2E
COMPONENT LOCATION:	C-MIDDLE/CORRIDOR
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-12-4L
CAPACITY:	100A 126/208 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2F
COMPONENT LOCATION:	CW/CORRIDOR
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2G
COMPONENT LOCATION:	ROOM 2212
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2H
COMPONENT LOCATION:	SOUTH 2201
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	--
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2K
COMPONENT LOCATION:	CW/CORRIDOR
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-L
CAPACITY:	225A 208V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2L
COMPONENT LOCATION:	C-MIDDLE/CORRIDOR
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2M
COMPONENT LOCATION:	CW RM 2404
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208V 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2N
COMPONENT LOCATION:	CW/CORRIDOR
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2N
COMPONENT LOCATION:	NORTH ELEC. CLOSET
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	SL-LA-29495-IT9
MODEL NO:	NEB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2P
COMPONENT LOCATION:	ELEC. CLOSET-NORTH
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	SL-LA-229495-IT11
MODEL NO:	NEB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 2R
COMPONENT LOCATION:	NORTH CLOSET
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	SL-LA-29495-IT10
MODEL NO:	NEB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3A
COMPONENT LOCATION:	3104 ROOF ACCESS
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3B
COMPONENT LOCATION:	CENTER WING-CORR.
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3C
COMPONENT LOCATION:	CENTER WING-CORR.
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3D
COMPONENT LOCATION:	CENTER WING-CORR.
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3DH
COMPONENT LOCATION:	3RD CENTER CORR
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	GE
SERIAL NO:	
MODEL NO:	AQF3424MB
CAPACITY:	400A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3F
COMPONENT LOCATION:	CENTER WING
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208 3P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3G
COMPONENT LOCATION:	ROOF ACCESS 3404
AREA SERVED:	ROOF
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NA1B-42-4L
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3H
COMPONENT LOCATION:	NW-ELECT.CLOSET
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	LA-29495-IT6
MODEL NO:	NEB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3K
COMPONENT LOCATION:	NORTH - CLOSET
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	LA-29495-IT7
MODEL NO:	NEB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3L
COMPONENT LOCATION:	NW-ELECT.CLOSET
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	LA-29495-IT5
MODEL NO:	NEB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3M
COMPONENT LOCATION:	CW 3322
AREA SERVED:	3301,3310,3317
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	GE
SERIAL NO:	
MODEL NO:	AFA35-AQF3422AB
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL 3N
COMPONENT LOCATION:	CW 3322
AREA SERVED:	3425,3443,3317,3443A
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	GE
SERIAL NO:	
MODEL NO:	AQF
CAPACITY:	225A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL A
COMPONENT LOCATION:	SUB BSM NW ERM
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	LA29495IT12
MODEL NO:	NEB
CAPACITY:	100A 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL EM-2
COMPONENT LOCATION:	CW CORRIDOR
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NQO-30230-4-2B
CAPACITY:	100A 120/240 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL EM-4
COMPONENT LOCATION:	CW
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NQ0-30230-6-2X
CAPACITY:	70A120/240 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	PANEL EM-5
COMPONENT LOCATION:	NW 2429
AREA SERVED:	NW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	NQO-30230-72Y
CAPACITY:	70A 208/120 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	ROOF GENERATOR
COMPONENT LOCATION:	ROOF OF CW
AREA SERVED:	CW
DATE OF INSTALLATION:	UNKNOWN
REMAINING SERVICE LIFE:	2-5 yrs
OVERALL SEVERITY:	M
MANUFACTURER:	OLYMPIAN/CAT
SERIAL NO:	
MODEL NO:	
CAPACITY:	(3) 120V CKTS
ACTION REQUIRED:	Replace
SEVERITY RATING:	Med.-Fair (2-5 yr life)

COMMENTS: Too small capacity to be used in a Lab Building.

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	TRANF #1
COMPONENT LOCATION:	SUB BSM ERM#1
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	CHALLENGER
SERIAL NO:	29-6/185-161604
MODEL NO:	3BN/752-415
CAPACITY:	75KVA 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	TRANF #2
COMPONENT LOCATION:	SUB BSM ERM#1
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	CHALLENGER
SERIAL NO:	29-6/185-161265
MODEL NO:	3BN/752-415
CAPACITY:	75KVA 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	TRANSF NW#1
COMPONENT LOCATION:	SUB BSM NW ERM
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	ITC
SERIAL NO:	26674-879
MODEL NO:	HTUL
CAPACITY:	75KVA 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	TRASF #2
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	75TBH
MODEL NO:	S6
CAPACITY:	75KVA 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	UNIT SUB #1
COMPONENT LOCATION:	SUB BSM ERM#1
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	S109696-LA
MODEL NO:	HV/040-54A
CAPACITY:	500KVA 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	UNIT SUB#2
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	S109694LA
MODEL NO:	HV
CAPACITY:	750KVA 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	UNIT SUB#3
COMPONENT LOCATION:	SUB BSM CW ERM
AREA SERVED:	CW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	S109
MODEL NO:	040-S4A
CAPACITY:	750KVA 208 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	UNIT SUB#4
COMPONENT LOCATION:	SUB BSM NW ERM
AREA SERVED:	NW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	WESTINGHOUSE
SERIAL NO:	YGR51521
MODEL NO:	LBF
CAPACITY:	750KVA 208V 3P4W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

ELECTRICAL DEFICIENCY TABULATION

FACILITY: PIERCE HALL

SURVEYED BY: N.A. COHEN GROUP

DATE:

COMPONENT:	UNNAMED MCC
COMPONENT LOCATION:	OUTSIDE SUB BSM ERM#1
AREA SERVED:	SW
DATE OF INSTALLATION:	1966
REMAINING SERVICE LIFE:	0 yrs
OVERALL SEVERITY:	H
MANUFACTURER:	SQUARE-D
SERIAL NO:	
MODEL NO:	
CAPACITY:	600A 208V 2P3W
ACTION REQUIRED:	Replace
SEVERITY RATING:	High-Poor (<2 yr life)

COMMENTS:

Existing Gross Area by Wing and Floor						
Wing	**LL1**	**LL2**	**1**	**2**	**3**	**Total**
North	4,066	-	7,540	7,822	7,822	**27,250**
Center	6,287	838	17,435	17,825	17,825	**60,210**
South	2,216	1,600	12,086	11,045	-	**26,947**
Total GSF / Wing / Floor	**12,569**	**2,438**	**37,061**	**36,692**	**25,647**	**114,407**

Existing Assignable Area by Wing, Floor and Room Type					
Wing	**Room Type**	**1**	**2**	**3**	**Total**
North	Inactive	2000	0	1835	3835
	Classroom	0	0	0	0
	Research	931	93	3264	4288
	Class Lab	1382	0	0	1382
	Offices	423	4004	252	4679
	Study	401	0	0	401
	Other	353	1209	0	1562
	Total ASF / Wing /Floor	**5490 asf**	**5306 asf**	**5351 asf**	**16,147**
Wing	**Room Type**	**1**	**2**	**3**	**Total**
Center	Inactive	0	0	941	941
	Classroom	0	0	787	787
	Research	0	6529	4121	10650
	Class Lab	9581	2227	5690	17498
	Offices	2271	2084	256	4611
	Study	0	0	0	0
	Other	336	956	0	1292
	Total ASF / Wing /Floor	**12188 asf**	**11796 asf**	**11795 asf**	**35,779**
Wing	**Room Type**	**1**	**2**	**3**	**Total**
South	Inactive	278	0	-	278
	Classroom	0	0	-	0
	Research	2077	2817	-	4894
	Class Lab	0	0	-	0
	Offices	5042	3968	-	9010
	Study	401	0	-	401
	Other	226	0	-	226
	Total ASF / Wing /Floor	**8024 asf**	**6785 asf**	**-**	**14,809**
Total ASF / Floor		**25,702**	**23,887**	**17,146**	**66,735**

Capital Asset Strategies
Architects & Engineers
UNIVERSITY OF CALIFORNIA, RIVERSIDE

UNIVERSITY OF CALIFORNIA
UC RIVERSIDE

MEETING NOTES

PROJECT	Pierce Hall Improvements	**MEETING DATE**	August 10, 2016
PURPOSE	Pierce Hall Loading Dock		

Attendees: Deborah McWilliams, Andy Steward, Bob Slater, Toshio Ishida, Blythe Wilson, Melissa Garrety, Uma Ramasubramanian, Jon Harvey

The purpose of the meeting is to discuss Pierce Hall loading dock to review site development considerations and formulate site requirements for the area.

Discussion Highlights:

1. Updates from Previous Meeting.
    a. Discussions on the quantity of gas cylinders that need to be placed in a holding area continue within CNAS. The original request of 30 tanks appears to a legacy requirement.
        i. As gas cylinders are delivered to the laboratory by the vendor throughout campus, the overall need to stage 30 tanks in the loading dock is questioned.
        ii. Proposed that a space to store 10 tanks will be sufficient at this time.
        iii. A final decision on the program requirement will be provided no later than August 31.
    b. Plan to empty the storage trailer and remove the trailer by the beginning of January 2017.
    c. Parking lot 16 will be the designated ADA lot for the Pierce Hall Improvement project. Follow-up meetings are planned to develop an overall Campus strategy to provide ADA parking.

2. Pierce Hall Loading Dock reconfiguration opportunities
    a. A vision sketch was distributed that illustrated the idea of providing a soft landscape transition between the Campus pedestrian walkway and the loading dock area. A need to consider the requirements of a future building on the open space area to the east of the loading dock was also discussed.
    b. The loading dock is a central location that supports multiple buildings. Planning requirements to support both existing and future buildings are as follows.
        i. Maintain the ability to convert the east/west pedestrian walkway into a fire lane sometime in the future.
        ii. Allow the loading dock area to expand eastward to support a future facility. This will require relocating the emergency generator and electrical switches shown on the Classroom Addition Site Plan. Future relocation of the nitrogen tank may also be required.
        iii. Replacing the raised dock area on the west side of the lot is not necessary.
        iv. Revise grade in loading zone to reduce the potential for storm water to flood the building. Anticipate level of the parking area will be less than the sidewalk leading into the north entrance.

v. Provide a soft landscape on both the north and east sides that can easily be replaced to support long-term campus development.

3. Next Steps
   a. Capital Planning will forward recommendations to the consultant team and to CAS leadership for review.

4. Loading Dock Program Recommendations

Service / Item	Quantity	Notes
Three cubic yard bins	4-6	Trash collection point for Pierce and Bourns B. Covered area required per code Preference is to provide space for 6 bins.
Fire Truck	--	Ability to turn-around vehicle.
Refuse truck and Refuse trailer	--	Ability to access location for trash collection and make a 3 point turn (at least a hammer head) when the parking slots are full.
Service Vehicle Parking Spaces	3	minimum space size 9 X 18 feet
Nitrogen Tank	1	Remains in current location
Delivery access	--	Retain north wing delivery entrance
Soft Landscape Edges	--	Provide soft edges on the north and east side of the loading dock to address immediate program requirements without compromising future development opportunities.
Site Plan Revisions	--	Consultant team to identify another location for the emergency generator and electrical equipment to maintain access to the future building site.

5. Prelimianry Loading Dock Vision